



MADURAI KAMARAJ UNIVERSITY

(University with Potential for Excellence)

DIRECTORATE OF DISTANCE EDUCATION



M.B.A

AIRLINE & AIRPORT MANAGEMENT

**FIRST YEAR
I- SEMESTER**

FINANCIAL ACCOUNTING

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MBA – AIRLINE MANAGEMENT

PAPER 3

FINANCIAL ACCOUNTING

SYLLABUS

UNIT I

Financial Accounting – Definition – Accounting Principles – Concepts and Conventions – Trial balance – Final Accounts [Problems] – Depreciation Methods – Straight Line Method, Written Down Value Method, Sinking Fund Method.

UNIT II

Financial Statement Analysis – Objectives – Recognizing the Financial Statement Information – Techniques of Financial Statement Analysis : Comparative Statements, Common Size Statement, Trend Percentage – Accounting Ratios – Constitution of balance sheet using ratios. (Problems) – Du Pont Analysis.

UNIT III

Funds Flow Statement – Statement of Changes in Working Capital – Computation of Funds from Operation – Working for Computation of various Sources and Uses – Preparation of Funds Flow Statement – Cash Flow Statement Analysis – Computation of Cash from Operations (Problems) – Distinction between Funds Flow and Cash Flow Statement (Problems).

UNIT IV

Cost Accounting – Meaning – Distinction between Financial Accounting and Cost Accounting – Cost Terminology: Cost, Cost Centre, Cost Unit – Elements of Cost – Cost Sheet – Problems.
Budget, Budgeting and Budgetary Control – Types of budget – Preparation flexible and fixed budgets, Master Budget, and Cash Budget – Problems – Zero Base Budgeting.

UNIT V

Marginal Costing – Definition – Distinction between marginal costing and absorption costing – Break Even Point Analysis – Contribution, P/V Ratio, Margin of Safety – Decision making under marginal costing system – key factor analysis, make or buy decision, export decision, sales mix, decision making problems.

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CHAPTER 1 - FINANCIAL COUNTING

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1.0 INTRODUCTION

There is a limit to human memory. We cannot remember everything we do or each transaction we make. We make several payments and receive payments from others. Unless we record them properly, we cannot obtain any financial information. We require the recording of transactions must be in a systematic manner and that is the main functions of Accounting, whichever the form of business organisation – a sole proprietorship, a partnership, a company, a co-operative society or a corporation it has to maintain proper Accounts. The Accounting information is useful both for the Management and external agencies like tax department, banks and other institutions. Accounting is necessary not only for Business Organisation but also for Service Organisation like, Schools, Hospitals, Clubs and Bus Companies.

Accounting is the language of business. It records business transactions taking place during the accounting period. Accounting communicates the result of the business transactions in the form of final accounts. With a view to make the accounting results understood in the same sense by all interested parties, certain accounting assumptions, concepts and principles have been developed over a course of period.

1.1 UNIT OBJECTIVES

After learning this chapter, you will be able to:

- know the Basic Assumptions of Accounting.
- understand the Basic Accounting Concepts.
- know the Modifying Principles of Accounting.
- understand the Origin of Transactions – Source Documents.
- understand the Concept of Accounting Equation.
- know the Rules of Debit and Credit.
- know the Meaning and the Preparation of Journal, Ledger and Subsidiary books

1.2 DEFINITION AND SCOPE

Accounting has been defined in different ways by different authorities. A single definition cannot explain the subject in detail.

According to the American Accounting Association "Accounting is the process of identifying measuring and communicating economic information to permit informed judgment and decision by users of the information." (Identifying, Measuring and communication economic information)

"Accounting is the art of recording, classifying and summarizing in significant manner and in terms of money, transactions and events which are, in part at least. Of a financial character ad interpreting the result thereof" – American Institute of Certified Public Accountants.

1.3 OBJECTIVES OF ACCOUNTING

1. To maintain systematic records.
2. To ascertain Net Profit or Net Loss of the business for a particular period.
3. To ascertain the financial position of the business on a particular date.
4. To provide adequate, Accounting information to interested parties like creditors, research, scholars, Government Agencies and Employees.
5. To facilitate decisions regarding replacement of fixed assets and expansion of the business.
6. To devise remedial measure for the deviations between the actual and budgeted performances.

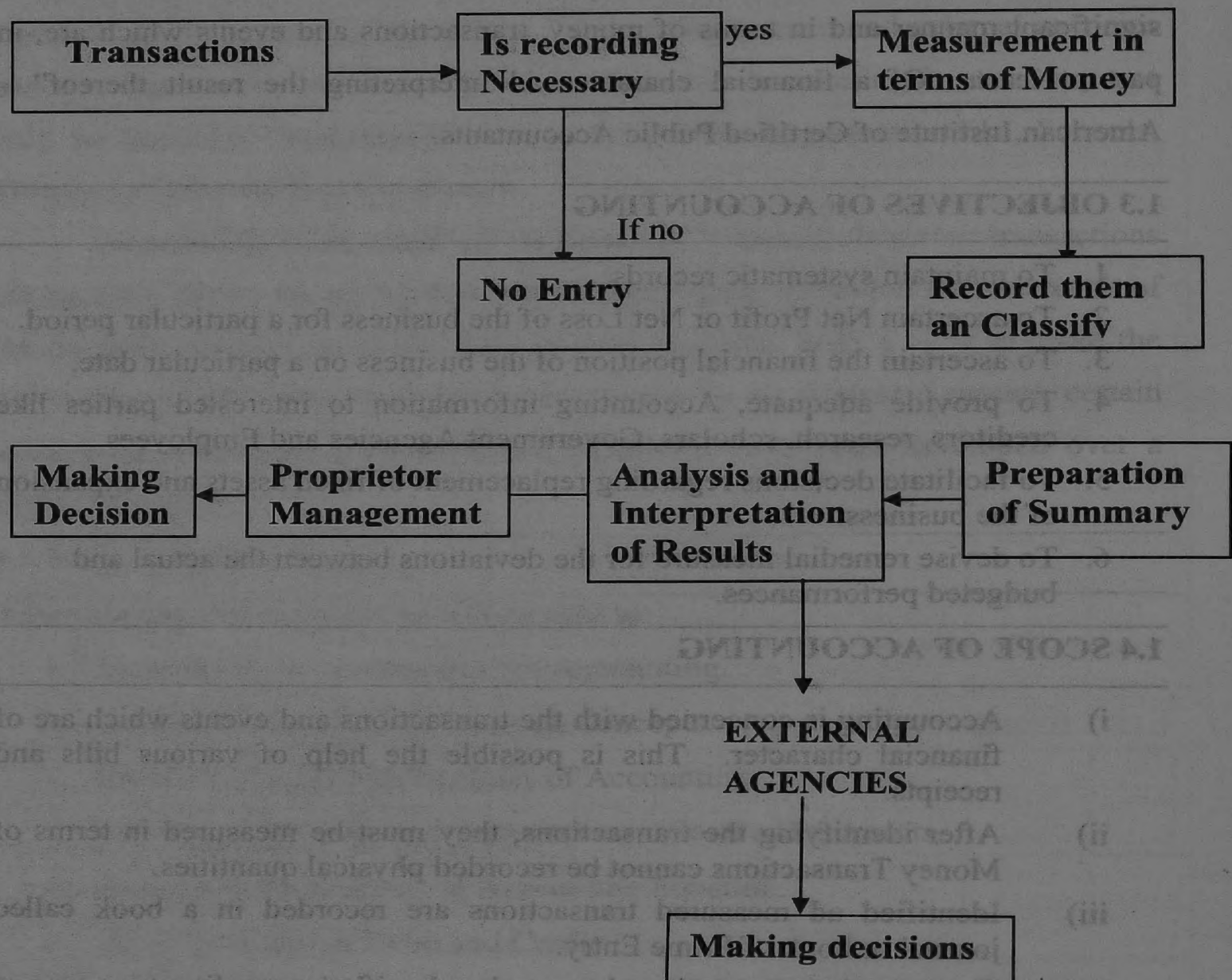
1.4 SCOPE OF ACCOUNTING

- i) Accounting is concerned with the transactions and events which are of financial character. This is possible the help of various bills and receipts.
- ii) After identifying the transactions, they must be measured in terms of Money Transactions cannot be recorded physical quantities.
- iii) Identified ad measured transactions are recorded in a book called journal or book of Prime Entry.
- iv) The recorded transactions have to be classified according to nature of transactions. This work is done in a separate book called "Ledger." A separate account is opened for each item, so that, all transactions relating to it can be brought at one place. E.g: Salaries Account.

- v) Now the date must be summarized periodically (usually once in a year) in an useful form. This can be done by preparing Profit and Loss Account and a Balance Sheet.
- vi) The summarized result have to be and interpreted with the help of statistical tools such as rations, charts, averages etc., and analysed critically. These dates will be communicated in the form of reports to the interested parties.

The Scope of Accounting can be presented as follows:

ACCOUNTING ACTIVITIES



Now, we shall see the various parties interested in Accounting Information. The year ending accounts viz., Profit and Loss Account and Balance Sheet will be viewed by different manner.

- i) *Owners:* They invest capital and shoulder the risk. They are very particular in knowing the profit of the business and financial position.
- ii) *Mangers:* Accounting information helps them to plan, control and evaluate all business activities. It helps for decision making.
- iii) *Lending Institutions:* Banks and other lending institution will check up the solvency and liquidity of borrowers only with the help of accounting information.
- iv) *Trade Creditors:* Those who supply goods and services on credit are called creditors. They are interested in knowing the credit worthiness of the enterprise. Before selling the goods on credit they want to know the repaying capacity of purchases.
- v) *Prospective Investors:* A person who wants to joint in a partnership on a person who wants to purchase the equity or preference shares and debentures of a company, would like to know the financial strength of the business accounting information will guide in this report.
- vi) *Tax Department:* The government authorities are interested in the financial statements to assess the tax liability of the enterprise.
- vii) *Trade Union:* The employees are also interested in accounting information so as to estimate the financial viability of the business.

1.5 BRANCHES OF ACCOUNTING

The economic, social and political conditions are bound to change. The economic development and technological improvement paved the way for large scale operations and advent of the company form of business organisation. Management function becomes more the more complex and increased the importance of accounting information. This gave rise to special branches of accounting.

Financial Accounting

The objective of this branch is to keep a record of all financial transactions. With the help of which (a) Profit and loss of the business can be ascertained (b) Financial position of the business on a particular date can be

understood. (c) The financial information required by the management and other interested parties can be supplied with.

Cost Accounting

The purpose of this Branch is to analyse the expenditure so as to ascertain the cost of various products manufactured by the firm and fix the selling price. It also helps for cost control and cost reduction which are essential for decision making.

Management Accounting

This helps management in taking rational policy decisions for the developments of business. E.g. Profit Planning Decisions, Make or buy decisions, Shut Down or Continue etc., This branch is primarily concerned with the accounting information about costs, profit, funds flow and cash flow etc., to the management for making decisions.

Social Accounting

It is pertaining to recording of socio-economic analysis like estimation of National and Internal Income, Balance Sheet etc.,

1.6 ADVANTAGES OF ACCOUNTING

- i) This replaced memory
- ii) Provides complete control over assets
- iii) Preparation of financial statement made easy
- iv) Comparative study is possible. Comparative statement and common size statements can be prepared
- v) Helps for planning and control
- vi) Prevents frauds and malpractices
- vii) Tax problem can be easily solved with the help of properly maintained accounts
- viii) In the events of sale of a firm, the accounting records will help to ascertain the purchase consideration of the business
- ix) In the eyes of law, properly maintained accounts will be accepted as good evidence in the case of disputes and settlement

1.7 LIMITATIONS

- I. Often accounting information are inadequate for proper analysis and decision making. The financial statement provide information about the overall profitability of the entire business. The cost and profitability of different activities cannot be analysed properly.
- II. Only transactions of financial nature will be recorded in accounting. This will not show quality of Human Resources, Export and Import licences, place goodwill and business contracts.
- III. The information are historical in nature. The assets and liabilities are valued in historical costs only. They do not reflect the current values.
- IV. Facts recorded in financial statement are greatly influenced by various accounting conventions and personal judgments. So, true picture may disappear from the eyes of public. Window dressing is often taking place.
- V. Accounting supplies data only – Not decisions, it is only means to end – Non an end itself.

1.8 BOOK-KEEPING AND ACCOUNTING

According to G.A. Lee, the Accounting System possessed two Stages:

(i) Arranging Routine Records (Day to Day Records) in prescribed form according to Accounting concepts and conventions, (ii) collected information classified analysed and finally interpreted. This will help for Decision Making.

The First Stage is known as Book-Keeping and the other one is Accounting.

Book-Keeping speaks about the maintenance of the Books of Accounts in systematic manner. It is an act of recording business transactions and measuring them in terms of money and recording them in Journal. From Journal, data will be posted in the Ledger.

The term Accountancy refers to systematic knowledge of Accounting with analytical approach. It is an academic subject like physics, Chemistry and Economics. It asks and explains "Who to do", "how to" and "why not". Accounting refers to the actual process of preparing and submitting the Accounts. Accountancy explains why and how to prepare the various books of account and how to submit the information to the interested parties.

Accounting is the art of putting accounting knowledge into practice. But Accountancy is Science which lays down rules and principles. Book-keeping is a narrow term and it is a Part of Accounting.

Divisions in Accounting: Generally, accounting can be sub-divided into (a) Book-keeping (b) Accounting and (c) Auditing.

Accounting function may be performed in two ways. Manual Accounting and Mechanised Accounting.

Accounting may again, be of two ways:

1. Macro Accounting
2. Macro Accounting

1.9 MICRO ACCOUNTING

This relates to accounts of individuals, firm or an association or any government.

1.10 MACRO ACCOUNTING

This relates to accounts of National Income, Balance of Trade and Payments, National Input and Output and Cash and Funds Flow.

Accountancy are closely connected with several subjects like Law, Economics, Statistics, Engineering and other allied subjects.

Recording of Transactions. Usually there are two accounting methods by which profit or income is measured. (1) Cash Basis and (2) Mercantile or accrual basis.

Cash Basis: All incomes are considered to be earned only when they are actually received in cash. Similarly, expenses are deemed to be incurred only when they are actually paid in cash. The difference between the two will be taken

as profit or loss of the said accounting period (year). Outstanding incomes as well as expenses are not considered. This method is popular among individuals like Doctors, Lawyers and Engineers.

Accrual Basis: Here Incomes are recorded to Particular period in which they are earned irrespective of the fact that whether the same has actually been received or nor. The same principle is followed for expenses also. The true profit or income can be ascertained in the methods. At present, this method is very popular.

Mixed or Hybrid Basis of Accounting: Under this method, Revenues are accounted for cash basis whereas expenses for accrual basis. This is not widely used in actual practice since accurate profit cannot be ascertained.

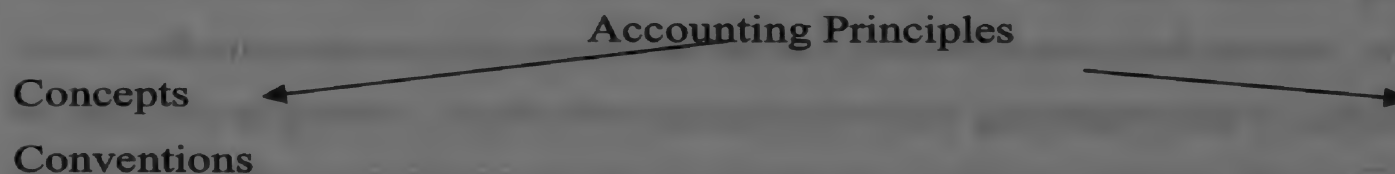
1.11 ACCOUNTING CONCEPTS AND CONVENTIONS

The development of Accounting Principle has been closely associated with the growth of Business. Proprietors want to know the well-bring of the Business. Creditors are interested in the solvency of the Business. Prospective Investors are interested in the earning capacity of the Business. So a Scientific approach to the recording and reporting of Business transactions is needed. To make the Accounting Language a standard one, a set of Accounting Principle concepts and conventions have been developed over a period of Time. The term 'principle' connotes 'Fundamental Belief' or 'General Truth.' Another school of Thought feels that the term 'Principle' means 'Rule of action or conduct.'

Accounting principle are acceptable when they satisfy the followed norms:

1. Usefulness
2. Objectivity
3. Feasibility (Practicability)

Accounting principles, Rules of conduct and action are explained by various terms such as concepts, conventions, doctrines, tenets, assumptions and postulates.



CONCEPTS

The term 'concept' is used to denote necessary assumptions or conditions upon which accounting is based. The important concepts are:

Business Entry Concept

Business is treated as a separate unit or entity from owners, creditors and others. Amount invested by the proprietor (Capital) is an internal liability of the business. According to this assumption, business is treated as a unit or entity apart from its owners, creditors and others. In other words, the proprietor of a business concern is always considered to be separate and distinct from the business which he controls. All the business transactions are recorded in the books of accounts from the view point of the business. Even the proprietor is treated as a creditor to the extent of his capital.

Dual Aspect Concept

This is the Core of Accountancy. All Business transactions will be recorded on dual aspect. Dual aspect principle is the basis for Double Entry System of book-keeping. All business transactions recorded in accounts have two aspects - receiving benefit and giving benefit. For example, when a business acquires an asset (receiving of benefit) it must pay cash (giving of benefit). Example: Ram has started a Business with a capital of Rs.20,000. The capital of the Business is equal to the asset of the Business. The equation is

$$\begin{array}{ccc} \text{Capital} & & \text{Assets} \\ \hline \text{Ram (20,000)} & = & \text{Cash (20,000)} \end{array}$$

In short, the dual aspect can be expressed as shown below:

Internal Liability (capital) + External liability (Bank loan etc.) = Assets.

Accounting Period Concept

The income from the Business can be ascertained by comparing the assets of the Business at the beginning of the Business, with those existing at the time of closure. The life of the business is assumed to be indefinite (going concern concept). But this is not possible in practice. The proprietor cannot wait for

drawing this profit and Income Tax Department cannot wait for Income Tax. Therefore Twelve Month period is normally adopted as Accounting Period.

Going Concern Concept

It is assumed that a Business has indefinite life unless and until it has entered into a state of closure. As per this assumption, the business will exist for a long period and transactions are recorded from this point of view. There is neither the intention nor the necessity to wind up the business in the foreseeable future.

Money Management Concept

All the accounting transactions are recorded in terms of 'Money'. A fact which cannot be expressed in terms of Money is not recorded in Accounting Books. General health of the Managing Director of Company cannot be expressed in money terms. In accounting, only those business transactions and events which are of financial nature are recorded. For example, when Sales Manager is not on good terms with Production Manager, the business is bound to suffer. This fact will not be recorded, because it cannot be measured in terms of money.

Cost Concept

The assets is recorded at Cost Price – that is price paid to acquire it. This cost is the basis for all subsequent accounting for the asset. When assets is recorded at Cost Price, the change in the real worth of an asset with the passage of time is not recorded in the Account Book. For example, a Furniture is purchased for Rs.50,000/-. Its market value at the time of preparation of Final account is 80,000. This market price will not be considered. Thus the Balance Sheet figures do not reflect the present market values at all.

Periodic Matching of Cost and Revenue Concept

Desire of making profit is the urge to keep the proprietor engaged in Business Activities. That is why the profit are ascertained at regular intervals. The expenses are also properly calculated. The expenses and revenue are compared and Return and Investment (ROI) is ascertained.

2.12.8 Verifiable Objective Evidence Concept

All the accounting transactions must be supported by Bills, Invoices, vouchers and other documents. They must be objective evidence. They should exhibit facts as they are without bias toward either side. These documents are accepted in the eyes of law.

1.12 ACCOUNTING CONVENTIONS

Convention of Consistency

The aim of consistency principle is to preserve the comparability of financial statements. The rules, practices, concepts and principles used in accounting should be continuously observed and applied year after year. Comparisons of financial results of the business among different accounting period can be significant and meaningful only when consistent practices were followed in ascertaining them. For example, depreciation of assets can be provided under different methods, whichever method is followed, it should be followed regularly.

Convention of Conservatism

Prudence principle takes into consideration all prospective losses but leaves all prospective profits. The essence of this principle is

“anticipate no profit and provide for all possible losses”. For example, while valuing stock in trade, market price or cost price whichever is less is considered.

Convention of Materiality

“An item should be regarded as material if there is reason to believe that knowledge of it would influence the decision of informed Investor”. American Accounting Association (AAA). Important items must be properly recorded and unimportant items are either left out or adjusted with other information. It is true that an item material for one company may be immaterial for another. An item material in one year may not be for another year. In short, an item material or immaterial depends upon the circumstances.

Convention of Disclosure

It implies that accounts must be honestly recorded and prepared and all essential material information must, be disclosed without – fail. The term ‘Disclosure’ implies that there is to be an adequate disclosure’ of information which is of material interest to owners, creditors and prospective investors. E.g. Market values of investment and contingent liabilities may be stated as a Note in the Balance Sheet.

- a) Providing for Bad and doubtful Debts
- b) Making provisions for fluctuations in the price of Investments
- c) Convention of Consistency: The accounting practices and methods must remain unchanged. But the principle of flexibility must be adhered to. The principle of consistency plays its role particularly when alternative accounting method is equally acceptable. For eg. Depreciation of Fixed assets may be calculated on several Methods. But there must be a consistency in followed a particular method.

Accounting is a language of Business. This language can be understood with the help of concepts and conventions only.

Part – B

III. SYSTEMS OF BOOK – KEEPING

Book-keeping is an Art of recording business transaction in a systematic manner. In practice there are Two systems (i) Single Enter System (ii) Double Entry System.

i) *Single Enter System*: This does not mean that only one aspect of a transactions is recorded. It refers to incomplete records double entry system. Here, all transaction are not recorded and all Accounts Books are not maintained. The accounts are not complete and reliable. Tax Authorities do not approve this system. Real Accounts and Nominal Accounts are not kept. Therefore profit and loss account be prepared. For ascertaining the accuracy of Accounts, Trial Balance cannot be prepared. Business Transactions are mixed with personal transactions only small business organizations follow this system. Mahajan

System of Rajasthan is similar to single entry system or defective double entry system.

ii) *Double Entry System*: Every Transactions has two aspects-viz. Receiving aspects and giving aspects. But the aspects are recorded simultaneously in the same book or two different books. A transaction affects two accounts. We record both of them. This technique is known as Double Entry System.

E.g. Purchase a Furniture for Rs.1,000/- Here, there Receiving aspect is Furniture and giving aspect is Cash. Receiving aspect is entered in Furniture Account and giving aspect of cash is recorded in Cash book. This method of recording business transactions is called "Double Entry Systems". This system was advocated first by Luca Pacioli of Italy.

The advantages of Double Entry System:

1. The information are complete and reliable.
2. It helps the Management in taking suitable decisions.
3. The accuracy of the accounting work can be easily ascertained with the help of the statement called Trial Balance.
4. The year ending Accounts viz. Profit and Loss Account and Balance Sheet can be prepared easily and without delay.
5. This system is acceptable to Income Tax Department.
6. Amounts Receivable and Payable can be easily identified.

What is an Account? It is a summarized record of all transactions relating to a particular person, a thing or an Income or expense. It is vertically divided into tow parts and appears as English alphabet "T". The left hand side is called Debit side and the other side is Credit side.

CLASSIFICATION OF ACCOUNTS

Accounts

<i>Personal Account</i>	<i>Impersonal Accounts</i>	
(Siva, Edward, Abdul, Air India etc.)	Real Accounts	Nominal A/c

(Natural Personal' A/Cs Artificial Persons' A/Cs Representative Persons' A/Cs)	(Cash, furniture, good will etc.)	(Salaries, Wages lighting etc.

Note: when we add a prefix or suffix to a Nominal Account, it becomes as personal Account (interest is a Nominal Account. Interest outstanding and prepaid rent is a personal account.

Rules of Debit and Credit

The General rule is to debit the Account which received the benefit and credit the account which involves a giving aspect. However, three different rules have been framed for three classes of accounts. They are the lifeblood of Accountancy.

1.	For Personal Accounts:	Debit the Receiver and Credit the giver
2.	Real Accounts:	Debit what come in the Credit what goes out
3	Nominal Accounts:	Debit all expenses and losses and Credit all Incomes and Gains

Example:

1. Paid Cash to Ram Rs.1,000/-

Debit Ram's A/C (Personal A/C) – Received debited

Credit Cash A/C (Real A/C) - What goes out

2. Purchased a Table for Rs.5,000/-

Debit Furniture A/C (Real A/C) – What comes in

Credit Cash A/C (Real A/C) -

3. Paid Interest Rs.1,00/-

Debit Interest A/C (Nominal A/C) – An Expenses

Credit Cash A/C (Real A/C) -

4. Received Commission Rs.200/-

Debit Cash A/C (Real A/C) – What comes in

Credit Commission A/C (Nominal A/C) - An Income

Note: (1) When money is paid, to whom it is paid is not necessary. Purpose is important.

(2) When money is received, from whom it comes is not necessary what for is important.

JOURNAL

This is a book of prime entry – book or original entry – primary book. This is a daily record of business transactions. The process of recording a transaction in the journal is called ‘Journalising’ and the entries made in the Journal are known as Journal entries. The journal is divided into five columns viz., date, particulars, Ledger Folio, Debit and Credit columns. The name of the account to be debited is recorded first. The abbreviation ‘Dr’ for Debit also written like ‘Cr’ for Credit. In the ledger folio column, the page number of the ledger where the concerned account appears. This is done at the time of posting the information interested contract ledger. The amounts written in Debit and Credit columns are always equal (Double Entry). The Account which is credited always preceded by the word ‘To’. At the end of the journal entry, a brief description about the nature of transaction is given in the brackets. It is called narration.

Specimen:

A.Ltd - Journal

<i>Date</i>	<i>Particulars</i>	<i>L.F</i>	<i>Debit Amount</i>	<i>Credit Amount</i>
			Rs.	Rs.

Exercise:

Journalise the following transaction in the books of Ann India Ltd.

1999

		<i>Rs.</i>
Jan 1	Commenced business with cash	10,000
2	Paid in Canara Bank	1,000
3	Purchased goods for cash	5,00
6	Purchased furniture and paid by Cash	2,000
9	Bought good from Gopi	1,000

10	Sold goods for Cash	3,000
16	Sold goods for Cash	200
19	Sold goods to Somu	1,500
20	Sold goods to Mr. A for Cash	300
22	Purchased good from Mr. B for Cash	500
25	Drew cash from private expenses	200
30	Paid Salaries to Staff	2,000
31	Received Commission from Mr. C	400

2.13 CHECK YOUR PROGRESS

Now you are to classify the following items into real, personal and nominal accounts

- | | |
|--------------|------------------------|
| a. Capital | f. State Bank of India |
| b. Purchases | g. Electricity Charges |
| c. Goodwill | h. Dividend |
| d. Copyright | i. Ramesh |
| e. Latha | j. Outstanding rent |

LEDGER

A Journal is only a chronological record of business transactions. It does not provide all information regarding a particular item at one place. It is a mixture of Real, Nominal and Personal Accounts. It makes difficult to know the amount due to a particular supplier or Receivable from a Customer, we will have to check-up the whole journal. To overcome this practical difficulty, another book-ledger is maintained. Here different folios are allotted for different accounts. With the help of index, required account can be identified for posting and balancing journal cannot be eliminated by recording all transactions directly in the ledger. In such a case, we fail to get date-wise record of the transactions.

Posting into Ledger: Recording the transactions in the journal is the first stage. Posting the date into the ledger is the second stage.

Procedure:

- 1 Each journal entry must be posted into the respective accounts which have been debited and credited.
- 2 Positing will be made on the Debit side of the Account which is debited in the journal and the Credit side of the account which is credited in the journal.
- 3 Date must be written in the date column.
- 4 Narration is generally not required in the Ledger Account.
- 5 In the journal folio column, the page number of journal must be mentioned where the concerned entry appears. The ledger folio number must be mentioned in journal. This will help for cross reference.
- 6 The amount written in the journal entry, shall be entered in the amount columns of both the accounts.

Specimen:

Dr				Name of the Ledger Account				Cr	
<i>Date</i>	<i>Particulars</i>	<i>J.F</i>	<i>Amount Rs. P</i>	<i>Date</i>	<i>Particulars</i>	<i>J.F</i>	<i>Amount Rs. P</i>		

Balancing Ledger Accounts

When we want to know the net effect of several transactions in a particular Account, we have to Balance is the difference between the totals of Debit and Credit side of the Account. This process is known as **BALANCING**.

Procedure:

1. Total the heavier side.
2. Extend the same to the lighter side.
3. Find out the difference (Balance C/C)
4. Bring back the balance to its original side (Balance b/d)

The Balance calculated may be a debit balance or credit balance or a nil balance depending upon the total of both sides. In the care of Personal Account, it debit side is more, is a debtor to us vice-versa.

All Real Accounts will show debit balance (except purchase returns and sales). In the case of Nominal Accounts, Balancing work is not done. They are closed by Transfer to Trading and Profit & Loss Accounts at the time of preparing Final Accounts at the end of the accounting period. However, Nominal Accounts have to be balanced for the preparation of Trial Balance for ascertaining the accuracy of the work done so far.

When the Accounting year begins, the previous year's balances in different accounts are brought forward to the new books of Accounts. This is done with the help of journal entry. Here, all Assets accounts are debited and all liabilities accounts are credited. If proprietor's capital amount is not available, we can calculate the same by deducting the total of external liabilities from the total of assets. Subsequently, the posting of opening entry into the ledger is appropriately made.

Illustration -1

Journalize the following transactions. Post them in the ledger and Balance the Accounts. Also prepare a Trial Balance as on 01.01.99.

1998		Rs.
Jan 1	Ram commence Business Cash	10,000
1	Furniture for	5,000
3	Goods purchased for Cash	1,000
6	Purchased furniture and paid by Cheque	1,000
9	Purchased good from Sivam	1,500
15	Sold goods for Cash	2,000
17	Sold goods to Md	800
18	Returned good to Sivam	200
24	Md. Returned goods for	100
29	Ram drew cash from the office from his use	300
30	Paid Salary	600
31	Commission received from Anbu	200

TRIAL BALANCE

In the, double entry system every entry has its corresponding credit and debit. It follows, that at any given point of time, the posting from Journal, day books and cash book to the ledger is completed, the debit balances standing in all the ledgers including the cash book will equal the credit balances. At the end of the financial period (or at some other date) these balances are extracted and a schedule is prepared in journal form is called a Trial Balance.

Thus the total of debit balances appearing in the trial Balance must agree with the total of credit balances of appearing in the trial Balance. The next stage after posting accounts to the ledger is the preparation of a Trial Balance. The debit and credit balances of accounts are entered in this statement. The total of the debit and the total of the credit side must agree. An agreement indicates reasonable accuracy of the accounting work. The trial balance helps in ascertaining arithmetical accuracy of the ledger accounts, location of errors and in the preparation of financial statements.

Objects of Preparing Trial Balance

1. It forms the very basis on which final accounts are prepared.
2. It helps in Knowing the balance on any particular account in the ledger.
3. It is used as a test of arithmetical accuracy.

However, a Trial Balance is not a conclusive proof of absolute accuracy of the accounts. It does not indicate the absence of an error. Thus, a non-tallied trial Balance indicates the presence of book-keeping errors.

Adjusted Trial Balance

A Trial-Balance should be prepared before the adjusting entries are recorded in order to ensure that the debits are equal to the credits. In addition another Trial Balance prepared after recording the adjusting entries. This Trial Balance is called an Adjusted. Trial Balance which provides a convenient source of information for the preparation of final accounts.

Illustration -1

From the following details prepare an Adjusted Trial Balance after passing the necessary adjustment entries:

	Rs.		Rs.
Purchase	65,000	Sundry Creditors	35,000
Carriage Inward	1,000	Plant and Machinery	10,000
Wages	6,000	Buildings	5,000
Salaries	10,000	Furniture	5,000
Rent, rates and taxes	1,800	Bills Receivable	10,000
Insurance	1,500	Sundry Debtors	40,000
Interest Paid	1,000	Capital	66,000
Sales	95,000	Sundry Expenses	5,000
Cash and Bank	21,500	Opening Stock	21,000
Bills Payable	5,800		

Notes:

1. Salaries and wages due to be paid Rs.2,000 and Rs.1,500 respectively.
2. Insurance was paid to the extent of Rs.300 advance.
3. A sum of Rs.500 to be written off as bad debt out of sundry debtors and a provision of 5% to be created for doubtful debts.
4. Sundry expenses include Rs.2,000 spent for the personal purpose of the proprietor.
5. Sales for the Period include Rs.500 worth off goods (cost price) taken by the proprietor for personal consumption. He has also taken goods worth Rs.1,000 (cost price) for personal consumption which has not be recorded in the I books.
6. Depreciation to be provided as follows:-
 - i. Plant and Machinery 10%
 - ii. Building 5%
 - iii. Furniture 10%
7. Closing Stock Rs.20,000.

Solution:**JOURNAL ENTRIES**

<i>Date (2003)</i>	<i>Particulars</i>		<i>Dr (Rs.)</i>	<i>Cr (Rs.)</i>
	Salaries A/c To Outstanding Salaries A/c (Outstanding Salaries adjusted)	Dr	2,000	2,000
	Wages A/c To Outstanding Wages A/c (Outstanding wages adjusted)		1,500	1,500
	Drawing A/c To Sundry Expenses A/c (Sundry Exp. A/c now adjusted)	Dr	2,000	2,000
	Sales A/c To Sundry Debtors A/c	Dr	500	500
	(Goods taken by the proprietor for personal consumption and included in sales now cancelled)			
	Drawings A/c To Purchase A/c (Goods taken by the proprietor at cost price for personal consumption)	Dr	1,500	1,500
	Prepaid Insurance A/c To Insurance A/c (Insurance premium paid in advance adjusted)	Dr	300	300
	Bad Debts A/c To Sundry Debtors A/c (Amount written off as bad debt)	Dr	500	500
	Bad Debts A/c (5% on(40,000-500-500)) To Provision for Bad Debts A/c (Provision for Bad Debts created @ 5% on Debtors)	Dr	1,950	1,950
	Depreciation A/c	Dr	1,550	

To Plant & Machinery			1,000
To Buildings			250
To Furniture			300
(Depreciation Provided on various assets			
Closing Stock A/c	Dr	20,000	
To Purchase			20,000
(Closing Stock adjusted to purchases)			

Note: Since here provisions for Doubtful Debts is to be created before preparing final accounts Bad Debts A/c has been debited instead of P& L A/c.

Trial Balance as at.....

	Dr. Rs.	Cr. Rs.
Purchases (65000-1500-20000)	43,500	
Carriage Inward	1,000	
Wages (6,000+1000)	7,000	
Salaries (10,000+2,000)	12,000	
Rent, Rates & Taxes	1,800	
Interest (1,500-300)	1,200	
Interest Paid	1,000	
Sales (95,000-500)		94,500
Cash & Bank	21,500	
Sundry Creditors		5,800
Plant & Machinery (10,000-1,000)	9,000	
Buildings (5,000-250)	4,750	
Furniture (3000-300)	2,700	
Bills Receivable	10,000	
Sundry Debtors (40,000-500-500)	39,000	
Capital		66,000
Sundry Expenses (5,000-2,000)	3,000	
Opening Stock	21,000	
Outstanding Salaries		2,000
Outstanding Wages		1,000
Drawings (2000+1500)	3,500	

Prepaid Insurance	300	
Bad-Debts (500+1,950)	2,450	
Provision for Bad Debts		1,950
Depreciation	1,550	
Closing Stock	20,000	
	2,06,250	2,06,250

Illustration- 2

From the following particulars prepare a Trial Balance as on 30th September 2001:

Stock 1st October 2000 Rs.1,380, Debtors Rs.2,960, Creditors Rs.1,580, Capital Account 1st Oct. 2000 Rs.4,100, Drawings Rs.1,200, Bill Receivable Rs.770, Bad debt written off Rs.190, provision for Bad and Doubtful Debts Rs.160, Bills Payable Rs.470, Wage & Salaries Rs.1,920, Purchases Rs.6,580, Sales Rs.10,670, Bank Rs.580, Cash Rs.40, Rent, Rates & Insurance Rs.330, Sales Returns Rs.410, Purchase Returns Rs.280, Fixtures & Fittings Rs.550, General Expenses Rs.200, Discounts allowed Rs.520, Discounts Recd. Rs.370.

Trial Balance as on 30th Sept. 2001

	Dr. (Rs.)	Dr. (Rs.)
Stock 1 st Oct. 2000	1,380	
Debtors and Creditors	2,960	1,580
Capital Account 1 st Oct.2000		4,100
Drawings	1,200	
Bills Receivable	770	
Bad Debt written off	190	
Provision for Bad & Doubtful Debts		160
Bills Payable		470
Wages and Salaries	1,920	
Purchase & Sales	6,580	10,670
Bank	580	
Cash	40	
Rent, Rates & Insurance	330	
Sales & Purchase Returns	410	280

Fixtures & Fittings	550	
General Expenses	200	
Discounts	<u>520</u>	<u>370</u>
	<u>17,630</u>	<u>17,630</u>

Illustration 3:

Journalize the following transactions and post them to Ledger and balance the accounts. Also prepare a Trial Balance as on 30th April 2003.

2003.

- April 1 Ravi started business with Rs.15,000 of which Rs.4,000 were borrowed at 15% p.a. from Shri Sashi.
- 2 Purchased goods worth Rs.4,000 from Anand 2% trade discount.
- 3 Chase sales to Madan Rs.1,200.
- 6 Credit sales to Rs.2,000 less trade discount 2%
- 9 Paid cash Rs.1,950 to Anand and received discount of Rs.10
- 12 Received Rs.1,950 from Salvi in full settlement of his dues.
- 13 Returned goods of the price Rs.100 to Anand.
- 16 Paid into bank Rs.5,000
- 18 Issued a cheque for Rs.1,000 to Anand on account.
- 19 Purchased goods for Rs.2,000 from Anand.
- 22 Sold goods costing Rs.1000 at 25% profit to Ratan.
- 22 Received commission Rs.800 from S&Co.
- 24 Received a cheque for Rs.395 from Ratan & he was allowed discount Rs.5.
- 25 Ratan returned goods Rs.50
- 30 Paid Interest on loan Rs.50 to Sashi.
- 30 Paid Salaries Rs.2,000 out of which Rs.1,200 paid by cheque.
- 30 Paid into Bank Rs.500
- 30 Paid office Rent by cheque Rs.300.

JOURNAL

<i>Date (2003)</i>	<i>Particulars</i>		<i>Dr (Rs.)</i>	<i>Cr (Rs.)</i>
Apr 1	Cash A/c To Capital A/c To Sashi's Loan A/c (Cash brought into business and loan taken from Sashi @ 15% to start the business)	Dr	15,000	11,000 4,000
Apr 1	Purchase A/c To Anand's A/c (Credit purchase from Anand)	Dr.	3,920	3,920
Apr 3	Cash A/c To Sales A/c (Cash sales)	Dr	1,200	1,200
Apr 6	Salvi's A/c To Sales A/c (Credit Sales Salvi)	Dr	1,960	1,960

Apr 9	Anand's A/c To Cash A/c To Discount A/c (Paid cash to and received discount from Anand.)	Dr	1,960	1,950 10
Apr 12	Cash A/c Discount A/c To Salvi A/c (Received cash from & allowed discount to Salvi)	Dr Dr	1,950 10	1,960
Apr 14	Anand's A/c To Returns Outwards A/c (Returned goods to Anand)	Dr	98	98
Apr 16	Bank A/c	Dr	5,000	

	To Cash A/c (Paid cash into Bank)			5,000
Apr 18	Anand A/c	Dr	1,000	
	To Bank A/c (Issued a cheque to Anand)			1,000
Apr 19	Purchase A/c	Dr	2,000	
	To Sales A/c (Credit sales to Ratan)			2,000
Apr 22	Ratan's A/c	Dr	1,250	
	To Sales A/c (Credit sales to Ratan)			1,250
Apr 22	Cash A/c	Dr	800	
	To Sales A/c (Received commission)			800
Apr 24	Cash A/c	Dr	395	
	Discount A/c	Dr	5	
	To Ratan's A/c (Received a cheque from & allowed discount to Ratan)			400
Apr 25	Returns Inwards A/c	Dr	50	
	To Ratam's A/c (Received goods returned by Ratan)			50
Apr 30	Interest A/c	Dr	50	
	To Cash A/c (Paid interest for April 1993, to Sashi on loan taken from him)			50
Apr 30	Salaries A/c	Dr.	2,000	
	To Cash A/c			800
	To Bank A/c (Paid salary Rs.800 in cash and Rs.1,200 cheque)			1,200
Apr 30	Bank A/c	Dr	500	
	To Cash A/c			500

Apr 30	(Paid cash into bank) Rent A/c To Bank A/c (Issued a cheque for office rent for April, 1993)	Dr	300	300
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LEDGER

Dr

Cash Account

Cr

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
Apr 1	To Capital A/c		1,100	Apr 9	By Anand's A/c		1,950
Apr 1	To Sashi's Loan A/c		4,000	Apr 16	By Bank A/c		5,000
Apr 3	To Sales A/c		1,200	Apr 30	By Interest A/c		50
Apr 12	To Salvi's A/c		1,950	Apr 30	By Salaries A/c		800
Apr 12	To Commission A/c		800	Apr 30	By Bank A/c		500
Apr 24	To Ratan's A/c		395	Apr 30	By Balance c/d		11,045
			19,345				19,345
May 1	To Balance b/d		11,045				

Dr**Bank A/c****Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
Apr 16	To Cash A/c		5,000	Apr 18	By Anand's A/c		1,000
Apr 30	To Cash A/c		500	Apr 30	By Salaries A/c		1,200
				Apr 30	By Rent A/c		300
				Apr 30	By Balance A/c		3,000
			5,500				5,500
May 1	To Balance b/d		3,000				

Dr**Salaries A/c****Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
Apr 30	To Cash A/c		800	Apr 30	By Balance c/d		2,000
Apr 30	To Bank A/c		1,200				
			2,000				2,000
May 1	To Balance b/d		2,000				

Dr**Rent A/c****Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
pr 30	To Bank A/c		300	Apr 30	By Balance c/d		300
			300				300
May 1	To Balance b/d		300				

Dr**Commission A/c****Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
Apr 30	To Balance c/d		800	Apr 22	By Cash A/c		800
			800				800
				May 1	By Balance b/d		800

Dr**Interest A/c****Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
Apr 30	To Cash A/c		50	Apr 30	By Balance c/d		50
			50				50
May 1	To Balance b/d		50				

Dr**Discount Account****Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
Apr 12	To Salvi's A/c		10	Apr 9	By Anand A/c		10
Apr 24	To Ratan's A/c		5	Apr 30	By c/d		5
			15				15
May 1	To Balance b/d		5				

Dr**Capital Account****Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
Apr 30	To Balance c/d		11,000	Apr 1	By Cash A/c		11,000
			11,000				11,000
				May 1	To Balance b/d		11,000

Dr**Sashi's Loan Account****Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
Apr 30	To Balance c/d		4,000	Apr 1	By Cash A/c		4,000
			4,000				4,000
				May 1	To Balance b/d		4,000

Dr**Salvi's Account****Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
Apr 6	To Sales A/c		1,960	Apr 12	By Cash A/c		1,950
				Apr 12	By Discount A/c		10
			1,960				1,960

Dr**Anand's Account****Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
Apr 9	To Cash A/c		1,950	Apr 2	By Purchase A/c		3,920
Apr 9	To Discount A/c		10	Apr 19	By Purchase A/c		2,000
Apr 14	To Returns Outwards A/c		98				
Apr 18	To Bank A/c		1,000				
Apr 30	To Balance c/d		2,862				
			5,920				5,920
				May 1	To Balance b/d		2,862

Dr**Ratan's Account****Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
Apr 22	To Sales A/c		1,250	Apr 24	By Cash A/c		395
				Apr 24	By Discount A/c		5

				Apr 25	By Returns Inwards A/c		50
				Apr 30	By c/d		800
			1,250				1,250
May 1	To Balance b/d		800	May 1	To Balance b/d		2,862

Dr **Purchase A/c** **Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
Apr 30	To Anand A/c		3,920				
Apr 19	To Anand A/c		2,000	Apr 30	By Balance c/d		5,920
			5,920				5,920
May 1	To Balance b/d		5,920				

Dr **Sales Account** **Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
				Apr 3	By Cash A/c		1,200
				Apr 6	By Salvi A/c		1,960
Apr 30	By Balance c/d		4,410	Apr 22	By Ratan A/c		1,250
			4,410				4,410
				May 1	To Balance b/d		4,410

Dr **Returns Outward A/c** **Cr**

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
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Apr 6	To Balance c/d		98	Apr 14	By Anand		98
			98				98
				May 1	By Balance b/d		98

Dr

Returns Inwards Account

Cr

<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>	<i>Date (2003)</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount Rs.</i>
Apr 25	To Ratan's A/c		50	Apr 30	By Balance c/d		50
			50				50
May 1	To Balance b/d		50				

TRIAL BALANCE as on 30th April, 2003

	Dr.	(Rs.)	Cr.	(Rs.)
Cash A/c		11,045		
Bank A/c		3,000		
Salaries A/c		2,000		
Rent A/c		300		
Commission A/c			800	
Interest A/c		50		
Discount A/c		5		
Capital A/c			11,000	
Sashi's Loan A/c			4,000	
Creditor (Anant)			2,862	
Debtor (Ratan)		800		
Purchase A/c		5,920		
Sales A/c			4,410	
Return Outwards A/c			98	
Return Inwards A/c		50		
Total		23,170		23,170

FINAL ACCOUNTS

Trial balance proves the arithmetical accuracy of the business transactions, but it is not the end. The businessman is interested in knowing whether the business has resulted in profit or loss and what the financial position of the business is at a given period. In short, he wants to know the profitability and the financial soundness of the business. The trader can ascertain these by preparing the final accounts. The final accounts are prepared at the end of the year from the trial balance. Hence the trial balance is said to be the connecting link between the ledger accounts and the final accounts.

Parts of Final Accounts

The final accounts of business concern generally include two parts. The first part is Trading and Profit and Loss Account. This is prepared to find out the net result of the business. The second part is Balance Sheet which is prepared to know the financial position of the business. However manufacturing concerns, will prepare a Manufacturing Account prior to the preparation of trading account, to find out cost of production.

Trading Account

Trading means buying and selling. The trading account shows the result of buying and selling of goods.

Need

At the end of each year, it is necessary to ascertain the net profit or net loss. For this purpose, it is first necessary to know the gross profit or gross loss. The trading account is prepared to ascertain this. The difference between the selling price and the cost price of the goods is the gross earning of the business concern. Such gross earning is called as gross profit. However, when the selling price is less than the cost of goods purchased, the result is gross loss.

Items Appearing in the Debit Side

1. **Opening Stock:** Stock on hand at the beginning of the year is termed as opening stock. The closing stock of the previous accounting year is brought forward as opening stock of the current accounting year. In the case of new business, there will not be any opening stock.

2. **Purchases:** Purchases made during the year, includes both cash and credit purchases of goods. Purchase returns must be deducted from the total purchases to get net purchases.

3. **Direct Expenses:** Expenses which are incurred from the stage of purchase to the stage of making the goods in saleable condition are termed as direct expenses. Some of the direct expenses are:

i. **Wages:** It means remuneration paid to workers.

ii. **Carriage or carriage inwards:** It means the transportation charges paid to bring the goods from the place of purchase to the place of business.

iii. **Octroi Duty:** Amount paid to bring the goods within the municipal limits.

iv. **Customs duty, dock dues, clearing charges, import duty etc.:** These expenses are paid to the Government on the goods imported.

v. **Other Expenses:** Fuel, power, lighting charges, oil, grease, waste related to production and packing expenses.

Items Appearing in the Credit Side

i. **Sales:** This includes both cash and credit sale made during the year. Net sales is derived by deducting sales return from the total sales.

ii. **Closing Stock:** Closing stock is the value of goods which remain in the hands of the trader at the end of the year. It does not appear in the trial balance. It appears outside the trial balance. (As it appears outside the trial balance, first it will be recorded in the credit side of the trading account and then shown in the assets side of the balance sheet).

Format of Trading Account

Trading account of M/s..... for the year ended 31st March 20...

Debit		Credit	
Particulars	Rs.	Particulars	Rs.
To Opening Stock		By Sales	
To Purchases		Less: Returns Inward	
Less : Returns outward		By Closing stock	
To Wages		By Gross Loss c/d	
To Freight		(Transferred to P&L A/c)	
To Clearing charges			
To Packing charges			
To Dock dues			
To Power (factory)			
To Octroi Duty			
To Gross Profit c/d			
(transferred to P&L A/c)			
Total		Total	

Illustration: 1

Prepare Trading Account for the year ending 31st March 2008 from the following information.

Opening stock Rs.1,70,000 Purchases return Rs.10,000 Sales Rs.2,50,000 Wages Rs.50,000 Sales return Rs.20,000 Purchases Rs.1,00,000 Carriage inward Rs.20,000 Closing stock Rs.1,60,000

Trading Account for the year ending 31st March 2008

Dr.

Cr.

Particulars	Rs.	Particulars	Rs.
To Opening stock	1,70,000	By Sales	
To Purchases		2,50,000	2,30,000
1,00,000	90,000	Less: Returns Inward	1,60,000
Less Purchases return	50,000	<u>20,000</u>	
<u>10,000</u>	20,000	By Closing stock	
To Wages	60,000	By Gross Loss c/d	
To Carriage inwards		(Transferred to P&L A/c)	
To Gross profit c/d			
(transferred to P&L A/c)			
Total	3,90,000	Total	3,90,000

Profit And Loss Account

After calculating the gross profit or gross loss the next step is to prepare the profit and loss account. To earn net profit a trader has to incur many expenses apart from those spent for purchases and manufacturing of goods. If such expenses are less than gross profit, the result will be net profit. When total of all these expenses are more than gross profit the result will be net loss.

Need

The aim of profit and loss account is to ascertain the net profit earned or net loss suffered during a particular period.

Format

Profit and Loss Account for the year ended

Dr.

Cr.

Particulars	Rs.	Particulars	Rs.
To Trading A/c x x x (Gross Loss)		By Trading A/c x x x	
To Salaries		(Gross profit)	
To Rent & rates		By Commission earned x x x	
To Stationeries		By Rent received x x x	
To Postage expenses		By Interest received x x x	
To Insurance		By Discount received x x x	
To Repairs		By Net Loss	
To Trading expenses		(Transferred to Capital A/c	
To Office expenses			
To Interest paid			
To Bank charges			
To Sundry expenses			
To Commission paid			
To Discount allowed			
To Advertisement			
To Carriage outwards			
To Travelling expenses			
To Distribution expenses			
To Repacking charges			
To Bad debts			
To Depreciation			
To Net Profit (transferred to Capital A/c)			
Total		Total	

Items Appearing in the Debit Side

Those expenses which are chargeable to the normal activities of the business are recorded in the debit side of profit and loss account. They are termed as **indirect expenses**.

- i. **Office and Administrative Expenses:** Expenses incurred for the functioning of an office are office and administrative expenses – office salaries, office rent, office lighting, printing and stationery, postages, telephone charges etc.
- ii. **Repairs and Maintenance Expenses :** These expenses relates to the maintenance of assets - repairs and renewals, depreciation etc.

iii. **Financial Expenses** : Expenses incurred on borrowings – Interest paid on loan.

iv. **Selling and Distribution Expenses** : All expenses relating to sales and distribution of goods - advertising, travelling expenses, salesmen salary, commission paid to salesmen, discount allowed, repacking charges etc.

Items Appearing in the Credit Side

Besides the gross profit, other gains and incomes of the business are shown on the credit side. The following are some of the incomes and gains.

- i. Interest received on investment
- ii. Interest received on fixed deposits.
- iii. Discount earned.
- iv. Commission earned.
- v. Rent Received

Illustration

Prepare Profit and Loss Account, from the following balances of Mr. Kandan for the year ending 31.03-2007. Office rent Rs.30,000 Salaries Rs.80,000 Printing expenses Rs.2,000 Stationeries Rs.3,000 Tax, Insurance Rs.4,000 Discount allowed Rs.6,000 Advertisement Rs.36,000 Travelling expenses Rs.26,000 Gross Profit Rs.2,50,000 Discount received Rs.4,000

Solution:

Profit and Loss Account of Mr. Kandan for the year ending 31st March 2007

Dr.

Cr.

<i>Particulars</i>	<i>Rs.</i>	<i>Particulars</i>	<i>Rs.</i>
To Trading A/c x x x (Gross Loss)	80000	By Gross profit (transferred from the Trading A/c)	2,50,000
To Salaries	30000	By Discount received	4,000
To Office rent	3000		
To Stationaries	2000		
To Printing expenses	4000		
To Tax, insurance	6000		
To Discount allowed	26000		
To Travelling expenses	36000		
To Advertisement	67000		
To Net profit (transferred to capital A/c)			
Total	254000	Total	254000

BALANCE SHEET

This forms the second part of the final accounts. It is a statement showing the financial position of a business. Balance sheet is prepared by taking up all personal accounts and real accounts (assets and properties) together with the net result obtained from profit and loss account. On the left hand side of the statement, the liabilities and capital are shown. On the right hand side, all the assets are shown. Balance sheet is not an account but it is a statement prepared from the ledger balances. So we should not prefix the accounts with the words 'To' and 'By'.

Balance sheet is defined as 'a statement which sets out the assets and liabilities of a business firm and which serves to ascertain the financial position of the same on any particular date'.

A **Balance Sheet** has the following characteristics:

- a) It is prepared at a particular date and not for a period.
- b) It is prepared only after preparation of the Trading and Profit & Loss A/c. without the Profit & Loss A/c it will not give the financial position of the firm adequately.
- c) Capital is equal to the difference of assets and liabilities. Therefore the two sides of the balance sheet must have the same totals otherwise it is an indication of the presence of errors.
- d) It is not an account but only a statement of assets and liabilities.
- e) The balance sheet shows the financial position of a business at going concern concept.

Need

The need for preparing a Balance sheet is as follows:

- i. To know the nature and value of assets of the business
- ii. To ascertain the total liabilities of the business.
- iii. To know the position of owner's equity.

Format

The Balance sheet of a business concern can be presented in the following two forms

- i. Horizontal form or the Account form
- ii. Vertical form or Report form

i) Horizontal form of Balance Sheet:

The right hand side of the balance sheet is asset side and the left hand side is liabilities side. All accounts having debit balance will appear in the asset side and all those having credit balance will appear in the liability side.

Balance Sheet ofas on31 st March 20.....

Liabilities	Rs.	Assets	Rs.
Sundry creditors		Cash in hand	
Bills payable		Cash at bank	
Bank overdraft		Bills receivable	
Outstanding expenses		Sundry debtors	
Mortgage loans		Investments	
Reserve fund		Closing stock	
Capital		Prepaid expenses	
Add: Net profit		Furniture & fittings	
Less: Net loss		Plant & machinery	
Less: Drawings		Land & buildings	
		Business premises	
		Patents & trade marks	
		Good will	
Total		Total	

ii) Vertical form of Balance Sheet

In this, Balance Sheet is presented in a statement form.

Balance Sheet ofas on ..31st March.....

Particulars	Rs.	Rs.
Current Assets:		
Stock-in-Trade		
Sundry Debtors		
Prepaid Expenses		
Accrued Income		
Bills Receivable		
Cash at Bank		
Cash in Hand		
Total Current Assets		
Less: Current Liabilities:		
Sundry Creditors		
Bills Payable		
Bank Overdraft		
Outstanding Expenses		
Total Current Liabilities		
Net Working Capital:		
Add: Fixed Assets:		
Goodwill		
Land and Building		
Plant and Machinery		
Furniture		
Investment		
Total Fixed Assets		
Capital Employed		
(Both owner's and outsiders)		
Less: Long Term Liabilities		
Debentures		
Loans		

CHECK YOUR PROGRESS: I

1. _____ account enables the trader to find out gross profit or loss.
2. By preparing profit and loss account _____ can be find out.
3. Closing stock is _____ in the trading account.
4. Direct expenses appears in the debit side of the _____ account.
5. Indirect expenses appears in the _____ side of the profit and loss account.
6. All incomes are _____ in the profit and loss account.
7. Bad debt is a _____ expense.
8. 'Salaries and wages' appear on the _____ account.
9. Balance sheet shows the _____ of a business

Classification of Assets and Liabilities

Assets

Assets represents everything which a business owns and has money value.

In other words, asset includes possessions and properties of the business. Asset are classified as follows:

Assets

Tangible Intangible Fictitious Fixed Current

a) Tangible Assets:

Assets which have some physical existence are known as tangible assets. They can be seen, touched and felt, e.g. Plant and Machinery Tangible assets are classified into

i. Fixed assets :

Assets which are permanent in nature having long period of life and cannot be converted into cash in a short period are termed as **fixed assets**.

ii. Current assets :

Assets which can be converted into cash in the ordinary course of business and are held for a short period is known as **current assets**. This is also termed as **floating assets**. For example, cash in hand, cash at bank, sundry debtors etc.

Elements Of Financial Statements

The elements which are directly related to the measurement of financial position are assets, liabilities and equity. The elements which are directly related to the measurement of profit are income and expenses.

Asset: An asset is a resource controlled by the enterprise as a result of past events and from which future economic benefit is expected to flow to the enterprise.

Liability: A liability is a present obligation of the enterprise arising from past event the settlement of which is expected to result in an outflow from the enterprise of resources embodying economic benefits.

There is a distinction between a present obligation and future commitment. A decision by the management of an enterprise to acquire assets in future does not of itself give rise to a present obligation.

Solution:

Book value of old building		3,00,000
Less: Provision for Deprn.	2,25,000	
Sale of old Materials	1,500	
Old Material used in new building	5,000	2,31,500
		68,500

The cost of new building should be shown as Rs. 5,50,000 + 68,500 = Rs. 6,18,500

Illustration 2:

An agricultural land was purchased for a mill for Rs. 1,00,000. Rs. 10,000 was paid for land revenue.

Solution:

Cost of land amounting to Rs. 1,00,000 will be treated as Capital Expenditure and Land revenue of Rs. 10,000 will be treated as Revenue Expenditure.

Illustration 3:

Rs. 50,000 was spent on advertising for the introduction of a new product in the market the benefit of the market which will be divided for four years.

Solution:

Rs. 50,000 spent on advertising is to be treated as deferred revenue expenditure considering the benefit attributable for four years to come Rs. 12,500 is to be written off every year.

Illustration 4:

Rs. 10,000 spent as lawyer's fee to defend a suit claiming that the firm's factory site belonged to the plaintiff. The suit was not successful.

Solution:

Rs.10,000 incurred for defending the title to the firm's assets is a revenue expenditure. It however any expenditure incurred for rectifying the title is a capital expenditure.

Opening, Closing And Adjustment Entries**Opening Entries**

At the end of each accounting period a firm closes its books of accounts opens new books at the beginning of each accounting period. The first entry in the journal is to record the closing balance of various assets and liabilities at the end of the previous year or the opening balances in the beginning of the new year. The balance sheet prepared at the end of each year record these balances. It is from these balances that the first entry is passed which is known as the "opening Entry" e.g.

Balance Sheet as on 31st March, 1994

Liabilities		Assets	
Capital	44,200	Plant & Machinery	50,000
Sundry Creditors	25,000	Sundry Debtors	7,500
		Closing stock	5,000
		Cash in bank	6,000
		Cash in hand	700
	69,200		69,200

Journal

Date	Particulars	L.F	Dr.	Cr.
1994 Ap.1	Cash in hand	Dr	700	
	Cash at bank	Dr	6000	
	Stock A/c	Dr	5000	
	Plant & Machinery A/c	Dr	7500	
	To Sundry Creditors			25000
	To Capital			44200
	(Balances brought forward)			

The above entries will then be posted to the ledger accounts as follows:-

Cash Account

Dr

Cr

<i>Date</i>	<i>Particulars</i>	<i>L. F</i>	<i>Cash</i>	<i>Bank</i>	<i>Date</i>	<i>Particulars</i>	<i>L. F</i>	<i>Cash</i>	<i>Bank</i>
1994 Apr.1	To Balance b/d		700	6000					

Stock Account

Dr

Cr

<i>Date</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount</i>	<i>Date</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount</i>
1994 Apr.1	To balance b/d		5000				

Sundry Debtors Account

Dr

Cr

<i>Date</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount</i>	<i>Date</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount</i>
Apr.1	To balance b/d		7500				

Plant and Machinery Account

Dr

Cr

<i>Date</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount</i>	<i>Date</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount</i>
Apr.1	To balance b/d		50000				

Sundry Creditors Account

Dr

Cr

<i>Date</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount</i>	<i>Date</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount</i>
Apr.1					By Balance b/d		25000

Capital Account

Dr

Cr

<i>Date</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount</i>	<i>Date</i>	<i>Particulars</i>	<i>L.F</i>	<i>Amount</i>
Apr.1					By Balance b/d		44200

4.7.2 Closing Entries

In respect of Trading A/c:

<i>Date</i>	<i>Particulars</i>	<i>L.F</i>	<i>Dr</i>	<i>Cr</i>
	Trading A/c	Dr		
	To Stock (Opening) A/c			
	To Purchase A/c			
	To Factory fuel & power A/c			
	To Freight on Purchase A/c			
	(Purchases are net purchases i.e. purchase less purchase returns)			
	Sales A/c	Dr		
	Stock (closing) A/c	Dr		
	To Trading A/c			
	(Sales are net sales i.e. Sales less sales returns)			
	Trading A/c	Dr		
	To P & L A/c			
	(for transfer of gross profit)			
	In respect of Profit & Loss A/c:			
	Items of expenses etc.			
	P&L A/c	Dr		
	To Salaries A/c			
	To Rent A/c			
	To Interest A/c			
	Items of gain:			
	Interest received A/c	Dr		
	Miscellaneous Income A/c	Dr		
	To P & L A/c			
	(The above entries will close all nominal accounts.)			
	P & L A/c	Dr		
	To Capital A/c			
	(transfer of net profit)			
	Capital A/c	Dr		
	To P & L A/c			
	(transfer of net loss)			

4.7.3 Adjustment Entries

Adjustment means putting things in order. Adjustment entries are entries made for putting everything in order. The examples are:

- (i) Accrued/outstanding expenses and prepaid expenses
- (ii) Accrued Income and Income received in advance
- (iii) Depreciation

- (iv) Bad Debts, Provision for bad and doubtful debts, Provision or discounts on debtors;
- (v) Commission on profits
- (vi) Income tax, Advances Income-tax, Income-tax deducted at source, Provident Fund Employees' State insurance contributions.

4.8 Difference Between A Trial Balance And A Balance Sheet

<i>Trial Balance</i>	<i>Balance Sheet</i>
The purpose of a trial balance is to establish the arithmetical accuracy of the books of accounts.	The Balance Sheet aims at reflecting the financial position of the business.
No information about profits can be obtained from the trial balance.	Information about profit can be obtained from the balance sheet.
It may be possible to dispense with the preparation of the trial balance though its preparation is desirable.	To complete the accounting process the balance must be essentially be prepared.
All accounts personal, real and trial balance be written up.	Only personal and real account find place in the balance sheet.
Normally Trial balance are prepared monthly.	Balance sheet is prepared at the end of the trading period.
A trial balance can be prepared with or without adjustment. A trial balance incorporating adjustments is known as the adjusted trial balance.	A Balance Sheet cannot to be prepared without making adjustments and without taking into account all events and transactions for the year.
Closing stock does not appear in the trial balance however it may appear where an adjusted trial balance is prepared.	Closing stock appears at the balance sheet.

4.9 Assets and Liabilities Arrangement

Assets may be grouped as follows:-

<i>In order of Liquidity</i>	<i>In order of Performance</i>
Cash in hand	Goodwill
Cash at bank	Patents
Investments	Land and Buildings
Sundry Debtors	Machinery

Stock of Finished goods	Furniture
Stock of raw materials	Stock of partly finished goods
Stock of partly finished goods	Stock of raw materials
Furniture	Stock of finished goods
Machinery	Sundry Debtors
Land and Buildings	Investment
Patents	Cash at bank
Goodwill	Cash in hand

Liquidity: Liquidity means the ease with which assets may be converted into cash. Assets which are most difficult in this respect are written last.

Permanence: Assets which are to be used permanently in the business and are meant to be sold are written first.

Liabilities: Liability may be shown according to the urgency with which payment has to be made. Short term liabilities such as bills payable, and sundry creditors for supply of goods may be shown first, then long term liabilities and lastly capital. Another way is to show capital, long term liabilities and last short term liabilities.

Assets and Liabilities-Classification

Assets may be classified as:

a) Fixed Assets

- (i) Tangible fixed assets.
- (ii) Intangible fixed assets.
- (iii) Investment (long-term)

b) Current Assets

Fixed Assets: Fixed assets is an asset acquired for continuing use within the business with a view to earning income or making profits from its use either directly or indirectly. A fixed asset is not acquired for sale to a customer.

A tangible fixed asset is a physical asset, i.e. One that has solid existence, e.g. Plant & Machinery.

An intangible fixed asset is an asset which does not have a physical existence, e.g. Goodwill.

An investment might also be a fixed asset, investment purchased with a view to holding then for more than a year are classified as fixed assets.

Current Assets: Current assets are either item owned by the business with the intention of their resale or cash including cash at bank deposited by the business. These assets are "Current" in the sense that they are continuously flowing.

Other Current Assets

Short term investment. This includes short term trade investment.

Prepayments:

These are amounts which are already paid by the business for benefits which have not yet been consumed.

Trade Debtors:

These are debtors to the business for supply of goods to them.

Liabilities:

These are debts to the business that must be paid within one year. They are:

- (i) Loans payable within a year
- (ii) Bank Overdraft.
- (iii) Trade creditors for supply of goods.
- (iv) Bills of exchanges
- (v) Outstanding payments
- (vi) Interest on loans and accrued but not paid

Long-term Liabilities

Long term liability is a debt which is not payable within one year.

Owners Equity or Capital

The amount owing to the proprietors as capital is shown separately

Check your Progress: II

Choose the Correct Answer

1. Trading account is prepared to find out
a) gross profit or loss b) net profit or loss c) financial position
Wages is an example of
a) capital expenses b) indirect expenses c) direct expenses
3. Opening stock is
a) debited in trading account b) credited in trading a/cc) credit in profit and loss account
4. Balance sheet is a a) statement b) account c) ledger

5. Fixed assets have a) short life b) long life c) no life
6. Cash in hand is an example of a) current assets b) fixed assets c) current liability
7. Capital is a a) income b) assets c) liability
8. Drawing must be deducted from a) net profit b) capital c) gross profit
9. Current liabilities are recorded in the balance sheet on a) not recorded b) liability side c) assets side
10. Net profit is added to a) gross profit b) drawings c) capital

Final Accounts

Illustration 1

The following is the trial balance of M/S Suri Agencies as on 31 March 2008. Prepare Trading, Profit and Loss Account for the year ended 31 March 2008 and a Balance Sheet on that date.

	Rs.	Rs.
Capital		1, 00, 000
Building	15, 000	
Drawings	18, 000	
Furniture & Fittings	7, 500	
Motor Van	25, 000	
Loan from Hari @ 12% Interest		15, 000
Interest paid on above	900	
Sales		1, 00, 000
Purchases	75, 000	
Opening Stock	25, 000	
Establishment Expenses	15, 000	
Wages	2, 000	
Insurance	1, 000	
Commission Received		7, 500
Sundry Debtors	28, 100	
Bank Balance	20, 000	
Sundry Creditors		10, 000
	2, 32, 500	2, 32, 500

Adjustments:

- (a) The value of stock on 31-3-2008 was Rs.32, 000.
- (b) Outstanding wages Rs.500.

(c) Prepaid Insurance Rs.300.

(d) Commission received in advance Rs.800.

(e) Allow interest on capital @ 10%.

(f) Depreciation on building 2-½ %, Furniture & Fitting 10 %, Motor Van 10%.

(g) Charge interest on drawing Rs.500.

Solution

Dr Trading and Profit and Loss Account of M/s Suri Agencies for the year ended

31-03-2008

Cr

To Opening Stock	25,000	By Sales	1,00,000
To Purchases	75,000	By Stock	32,000
To Wages	2,500		
To Gross Profit c/d	29,500		
	<u>1,32,000</u>		<u>1,32,000</u>
To Establishment expenses	15,000	By Gross Profit b/d	29,500
To Depreciation:		By Commission received	
on Buildg. 375		7,500	6,700
F&F 750		Less: Commn. Recd. in advance	500
Mot. Van <u>2,500</u>		<u>800</u>	
To Interest on Loan 900	3,625	By Interest on drawings	
Add: O/S Int. on loan 900			
To Insurance 1,000	1,800		
Add: Prepaid Insurance 300	700		
To Interest on Capital 10,000			
To Net Profit c/d <u>5,575</u>			
	<u>36,700</u>		<u>36,700</u>
Liabilities	Amount	Assets	Amount
Capital 1,00,000		Building 15,000	
Add: Int.on Capital 10,000		Less: Depreciation <u>375</u>	14,625
Add: Net Profit <u>5,575</u>		F&F 7,500	
1,15,575		Less: Depreciation <u>750</u>	6,750
Less: Drawing 18,000		Motor Van 25,000	
(Add) Interest <u>500</u>		Less Depreciation <u>2,500</u>	22,500
<u>18,500</u>	97,075	Sundry Debtors	28,100
		Stock	32,000
Sundry Creditors	10,000	Prepaid Insurance	300
Loans 15,000		Bank Balance	20,000
Add: O/S Interest <u>900</u>	15,900		

Commission received in advance	800		
O/S Wages	500		
	1,24,275		1,24,275

Illustration 2: An inexperienced clerk of Bharathi and Co. prepared the following Trial Balance as on 31.12.2005.

Credits	Rs.	Debits	Rs.
Capital	2,000	Loss in fire	100
Loan at 10 %	6,000	Building	4,000
Creditors	846	Furniture and Fittings	500
Doubtful Debts Reserve	200	Plant and Machinery	5,800
Bills Receivable	852	Debtors	4,800
Returns to Suppliers	500	Bills Payable	815
Carriage on Sales	250	Bank Shares	520
Sales	14,954	Commission received	287
		Stock (1.1.2005)	2,818
		Cash in Hand	88
		Manufacturing Expenses	782
		Wages	750
		Salaries	394
		Postage and Telegrams	54
		Rates	95
		Printing and Stationery	86
		Insurance	17
		Purchases	2,986
		Interest on Loan (paid up to Sep.31)	450
		Returns from customers	110
		Carriage on purchases	150
	25,602		25,602

Prepare the correct Trial Balance, Trading Account, Profit and Loss Account for the year ending December 31, 2005, and the Balance Sheet as on that date after considering the following adjustments:

- 1) Stock on hand on 31.12.2005: Goods Rs.1600; Stationary Rs. 45.
- 2) Make up the reserve for doubtful debts at 5 % on debtors.
- 3) Depreciate plant at 7-½ % and Furniture at 10 %.
- 4) Outstanding expenses: Salaries Rs.75; Interest on Loan.
- 5) Dividend due on Bank shares Rs.52.

6) Insurance Co. agreed to meet the loss in fire fully.

7) Commission received in advance Rs.25.

Solution :2

Trading and Profit and Loss Account of Bharathi and co., for the year ended 31
December 2005

Particulars	Rs.	Particulars	Rs.
To Opening Stock	2828	By Sales	
To Purchases		14,954	14,844
2,986	2486	Less: Sales return	1,600
Less: Purchases Return	150	<u>110</u>	
<u>500</u>	782	By Closing Stock	
To Carriage on purchases	750		
To Manufacturing wages	9,458		
To Wages			
To Gross profit c/d			
	<u>16,444</u>		<u>16,444</u>
To Loss in fire	100	By Gross profit b\l	9,458
To Salary		By Commission	
394	469	287	262
Add: Outstanding	54	Add: Received in advance	52
<u>75</u>	95	<u>25</u>	100
To Postage and Telegram		By Dividend due	
To Rates	41	By Amount due from Insurance	
To Printing and Stationery	17	Co.	
86			
Less: Closing stock	600		
<u>45</u>			
To Insurance			
To Interest on Loan	40		
450	250		
Add: Outstanding			
<u>150</u>			
To Provision for bad debts:			
New Reserve	485		
240	7721		
Less: Old Reserve			

- 4) Create a provision for Discounts on Debtors and on Creditors at two per cent.
- 5) Provide for depreciation on Furniture and Fixtures at five per cent per annum and on Plant and Machinery at 20 per cent per annum.
- 6) Insurance prepaid was Rs.100.
- 7) A fire occurred on 25 March 2004 in the godown and Stock of the value of Rs.5000 was destroyed. It was fully insured and the Insurance Company admitted the claim in full.
- 8) Rs.2000 is to be transferred to Reserve Fund out of profits, if any.

Solution 3:

	Rs.		Rs.
To Opening stock	15,000	By Sales	
To Purchases		1,20,000	1,18,000
82,000	81,000	Less: SRs	
Less: PR	2,000	<u>2,000</u>	19,600
<u>1,000</u>	39,600	By Closing Stock	
To Freight & Duty		14,600	
To Gross Profit c/d		Add: Loss of Stock	
		<u>5,000</u>	
	1,37,600		1,37,600
To Carriage Outward	500	By GP b/d	39,600
To Rent, Rates & Taxes	4,600	By Rent	
To P & S	800	1200	600
To Trade Expenses	400	Less: Received in Advance	800
To P & T	800	<u>600</u>	
To Insurance		By Discount	200
700 Less: Prepaid	600	By Reserve for discount on	
<u>100</u>	21,300	Creditors	
To Salaries & wages			
To Bad Debts			
600			
Add: New Provision	1,200		
<u>1,000</u>			
	300		
1,600			
Less: Old Provision	4,750		
<u>400</u>			
To Provision for Discount			
On Debtors	5,870		
To Dep: P&M (4000+500)			
4,500			

F&F <u>250</u> To Net Profit Transferred to: Reserve Fund 2,000 Capital account <u>3,870</u>			
	41,200		41,200

	Rs.		Rs.
Sundry Creditors 10,000		Cash in hand 6,200	
Less: Reserve for 9,800		Cash at Bank 22,500	
Discount on Creditors <u>200</u> 600		Sundry Debtors 20600	
Rent received in ad		Less: Bad debts 600	
Reserve Fund:		20000	
Previous Balance 5,000	7,000	Less: New Prov.for DD <u>1000</u>	
Additions this year <u>2,000</u>		19000	
Capital 80,000		Less: Provision for	
Add: Net Profit <u>3,870</u>		Discount on Debtors <u>380</u>	18,620
83,870	77,870	Closing Stock	14,600
Less: Drawings <u>6,000</u>		Prepaid Insurance	100
		Insurance Co.	5,000
		F&F 5,000	
		Less: Depreciation <u>250</u>	4,750
		P&M 20,000	
		Add: Additions <u>5,000</u>	
		25,000	
	95,270	Less: Depreciation <u>4,500</u>	20,500
			95,270

4.11 KEY TO CHECK YOUR PROGRESS-I

[1. Trading, 2. net profit or loss, 3. credited, 4. Trading, 5. debit, 6. credited, 7. selling, 8. profit and loss account, 9. Financial position]

4.12 KEY TO CHECK YOUR PROGRESS-II

[1.(a), 2.(c), 3.(a), 4.(a), 5.(b), 6. (a), 7.(c), 8.(b), 9.(b),10.(c)]

4.13 MODEL QUESTIONS

1. What is trading account? What are its uses?
2. What are the merits of profit and loss account?
3. Write the difference between trial balance and balance sheet.
4. What do you mean by opening, closing and adjustment entries?
5. What are direct and indirect expenses?
6. Write the difference between trial balance and balance sheet.
7. What do you mean by current assets?
8. Explain the term liabilities.
9. Draw the format of vertical balance sheet.
10. What do you mean by Assets? Classify the assets with suitable examples.

Exercise :1

The following are some of the balances extracted from the ledger of Mr.Sundaram as on 31st December 2000. Prepare a trading account.

Particulars	Debit	Credit
Rs. Rs.		
Stock 1.1.2000	12,500	
Purchases	1,00,000	
Sales		1,50,000
Returns outwards	5,000	
Returns inwards		10,000
Salaries	4,400	
Wages	7,500	
Rent	2,750	
Carriage inwards	2,500	
Carriage outwards	750	
Power, coal, gas	1,000	

Stock on 31.12.2000 was valued at Rs.14,000.

[Answer : Gross profit Rs.35,500]

Exercise 2. The following balances are taken from the books of M/s. RSP Ltd. Prepare profit and loss account for the year ended 31st March 2008.

	Rs.		Rs.
Gross profit	5,25,000	Salaries & wages	1,00,000
Rent	10,000	Depreciation	5,000
Interest on loan	5,000	Office expenses	1,500
Distribution charges	2,500	Salesman salary	8,000
Bad debts	2,200	Stationery and printing	500
Commission received	3,000	Discount received	2,000
Interest received	5,000	Advertising	9,000
Taxes and insurance	2,000		

[Answer : Net profit Rs. 3,89,300]

Exercise:3

The following Trial Balance was extracted from the books of Shri.Sania as on 31 March 2005.

Debit Balances		Opening Stock	
Plant and Machinery	20,000	Motor Car	12,000
Manufacturing Wages	34,500	Purchases	1,02,000
Salaries	15,850	Sales Return	3,100
Furniture	10,000	Bad Debts	1,400
Freight on Purchases	1,860	Interest and Bank Charges	400

Freight on Sales	2,140	Cash at Bank	4,200
Buildings	24,000	Cash in Hand	1,120
Manufacturing Expenses	9,500	Credit Balances	
Insurance and Tax	4,250	Capital Account	80,000
Goodwill	25,000	Sundry Creditors	44,560
General Expenses	8,200	Bank Loan	15,000
Factory Fuel and Power	1,280	Purchase Returns	1,740
Sundry Debtors	78,200	Sales	2,50,850
Factory Lighting	950	Provision for Bad Debts	2,000

Prepare the Trading and Profit and Loss Account for the year ended 31 March 2005 and the Balance Sheet as on that date taking into consideration the following information:

1. Stock in hand on 31 March 2005 was valued at Rs.30,500.
2. Depreciate Plant and Machinery by 10%; Furniture by 5%; and Motor Car by Rs.1,000.
3. Bring provision for Bad Debts to 5% on Sundry Debtors.
4. A commission of 1% on the gross profit is to be provided for works Manager.
5. A commission of 2% on net profit (after charging the Works Manager's commission) is to the General Manager.

Exercise :4

S.H's Capital Account		1,80,000
S.H's Drawing Account	32,960	
Land and Building	50,000	
Plant and Machinery	28,540	
Furniture and Fixtures	12,500	
Carriage (Inward)	8,740	
Wages (Manufacturing)	42,940	
Salaries	9,340	
Bad Debt Provisions		3,940

Sales		2,82,460
Sales Return	3,520	
Bank Charges	280	
Coal, Gas and Water	4,440	
Rates and Taxes	1,680	
Discount Account (Balance)		240
Purchase (Adjusted)	61,460	
Bills Receivables	12,540	
Trade Expenses	3,980	
Sundry Debtors	75,600	
Sundry Creditors		24,340
Stock, 31st March, 1990	88,780	
Apprentice Premium		6,000
Fire Insurance	980	
Cash at Bank	26,000	
Cash in hand	2,280	
Bad Debts	420	
	4,96,980	4,96,980

Adjustments:

1. Charge Depreciation on Land and Building at 2 ½ %; on Plant and Machinery at 10% and Furniture and Fixtures at 10%. 2. Make a provision of 5% on the Sundry Debtors for Bad Debts. 3) The bank has intimated that a cheque for Rs.800 received from a customer has been dishonored. The customer is in difficulties and it is expected that he would be able to pay 60% of the claim on him. 4) Carry forward the following unexpired amounts: -

1. Fire Insurance Rs.250; 2.Rates and Taxes Rs.480; 3.Apprentice Premium Rs.800

Trade Expenses amounting to Rs.430 have not yet been paid. Wages include Rs.500 spent on the installation of new machinery on 1 April 2003. Allow 10% interest on Capital but not charged on Drawings.

CHAPTER 2 - COST ACCOUNTING

STRUCTURE

- 2.0 Introduction
- 2.1 Learning Objectives
- 2.2 Need
- 2.3 Cost, Expense And Loss
- 2.4 Costing
- 2.5 Purposes of Cost Accounting
- 2.6 Functions of Cost Accounting
- 2.7 Deference Between Cost Accounting And Financial Accounting
- 2.8 Advantages And Uses Of Cost Accounting
- 2.9 Specific Cost Systems
- 2.10 Installation of Costing System
- 2.11 Material Cost Management
- 2.12 Labour Cost
- 2.13 Overheads
- 2.14 Production Overhead
- 2.15 Absorption of Overheads By Products
- 2.16 Cost Sheet
- 2.17 Methods of Costing
- 2.18 Cost Reduction and Cost Control

2.0 INTRODUCTION

Every manufacturer strives to constantly improve his performance and to formulated correct policing decision for future. To achieve them, not only he should seek reliable of the above queries but should lay down necessary steps to achieve the desired results. Cost accounting is an essential management tool in this direction. Unless the cost of each product is worked-out and a proper analysis of expenditure is made, answers to the above queries can not easily be obtained. Financial books by them selves cannot provide answers for such question. Information available from financial books to be supplemented through other records which could give further details regarding the expenditure, its sources

where it is incurred and its impact on costs. This is exactly where the necessity for cost accounting and cost records arises.

2.1 LEARNING OBJECTIVES

After studying this chapter you should be able to

- Explain terms such as cost accounting and financial accounting
- Explain the advantages and installation of costing system
- Explain the different cost accounting concepts and specific cost system
- Describe the procedure relating to material control
- Explain the labour cost accounting and different incentive schemes
- Describe the measures for control of overheads by classification, allocation, apportionment and absorption of overheads.
- Explain the term cost sheet and preparation of cost sheet.

2.2 NEED

Every manufacturing organization ensures that it periodically gets information regarding profit & loss that the company is making and the position of its assets and liabilities. These are available through profit & loss account & balance sheet. Knowledge of merely profit or loss made in a given period is not by itself enough for evaluating management performance, guiding management decision or laying down management policies. An intelligent study of figures thrown by the profit and loss account and balance sheet lead to certain pertinent queries such as:

- (i) Is the profit earned, the optimum that the company could earn?
- (ii) How does this profit compare with the profit in the earlier years and with those earned by the similar units in the same industry?
- (iii) Which of the products earned profit & how much?
- (iv) How could the profit be improved?
- (v) Is the capital locked up in the inventories and work-in-progress reasonable or is it excessive?
- (vi) How effective is the capital employed?

- (vii) Are the expense incurred in operating the undertaking kept of a minimum level possible?
- (viii) Do the selling price of the product requires revision?
- (ix) Are the different stages of manufacturing process being carried out effectively and is the wastage under each one of them under control?

6.3 COST, EXPENSE AND LOSS

Cost, expense and loss are three distinct terms. **Cost** represents the amount of expenditure (actual or notional) incurred on or attributable to cost objective. It is a measure of resources that have been or must be sacrificed for a cost objective.

When expenditure is made, it represents sacrifice of resources for an economic benefit

- (i) which is yet to be received e.g rent for future periods
- (ii) Which has been received e.g rent for period which expired and
- (iii) Which is lost i.e. there is no matching benefit for this expenditure

Based on the above discussion relating to economic benefit, the following terms emerge:

- (i) deferred cost (ii) expense (iii) loss

Deferred Cost:

If economic benefit has not been received during the accounting period, the expenditure is carried forward as a deferred cost e.g prepaid insurance. Deferred costs are shown in the Balance Sheet as unexpired cost.

Expense:

When it is established that economic benefit is not yet to be received expenditure is classified as expired cost. Expired cost means either expense or loss. If the economic benefit has been received, this may be referred to as utilized expired cost or expense. Expense is expired cost which has matching economic benefit. It is deductible from the revenue e.g rent paid for the accounting period is an expense.

Loss: If it can be established that there is no matching economic benefit for expired cost, it is referred to as loss.

This discussion is summarized in the flow chart given below.

2.4 COSTING

Costing is the technique consisting of principles and rules which govern the procedure of ascertaining cost of products and services

2.4.1 Cost Accounting – Meaning

Cost accounting is the process of accounting costs. It begins with recording of the income and expenditure and ends with presentation of statistical data. It is the formal mechanism by means of which costs of products or services are determined and controlled. More appropriately, it is an orderly process of using the principles of general accounting to record the cost of operating a business. It provides the management information both about total costs and cost per unit of items produced or services rendered. **Thus cost accounting is a quantitative method that records, collects and allocates appropriable expenditure for determination of the costs of products or services.** The same cost information can be rearranged for many diverse internal purposes such as product costing, planning cost control and special decision making.

The costing terminology issued by the Institute of Cost & Work, Accountants London defines cost accounting as:

“The Technique and process of ascertaining cost” cost has been defined as “amount of expenditure incurred on a given thing”

Through the cost accounting has been defined as the technique and process of ascertaining costs, the scope of the subject concern not only cost ascertainment but also cost control and cost presentation.

2.4.2 Cost Ascertainment Deals with

- (i) The collection and analysis of expenses;
- (ii) The measurement of production of the different products at the different stages of manufacture; and
- (iii) The linking of production with expenses;

Cost Control deals with the following:

- (i) Set up targets for expenses and production performance;
- (ii) Measure periodically actual expenses and production performances;

- (iii) Compare the actuals with targets and find out the variations;
- (iv) Analyse the variations both the causes and executives responsible there for; and
- (v) Take corrective actions to eliminate the variations thereby bringing the actual closer to the targets.

Cost control aims at guiding the actual towards line of targets and regulates the actual if they deviate or vary from the targets. Two main systems of cost control are:

- Budgetary control and
- Standard costing

Cost Presentation aims at supplying the right information to:

- The right person;
- At the right time; and
- In the right form;

Hence the cost presentation deals with:

- (i) The nature of the information presented;
- (ii) The person to whom it is presented;
- (iii) The time lag or the frequency with which is presented; and
- (iv) The form or the method of reporting that is adopted.

2.5 PURPOSES OF COST ACCOUNTING

In devising a cost accounting system, the purposes which it is desired to fulfil must be kept clearly in mind. The main purposes are:

- (i) *Cost Finding:* This consists of cost determination and measurement. Cost ascertainment aims at specific and precise total and unit costs of products and services. Once cost is ascertained, it would be possible to evaluate the profitability of individual product, process or job.
- (ii) *Inventory valuation and profit determination:* The main aim of cost accounting has been to furnish the unit product cost which is essential for inventory valuation and income determination. In other words, the purpose has been to provide reliable and timely information regarding:

(a) prices of inputs or resources, and (b) prices of outputs. Input prices are the prices of materials, labour and overheads which are consumed in the process of production. Output prices are the prices of job, contents units or batches turned off or services rendered.

- (iii) *Cost Planning and Control:* This consists of estimating costs for production and activities for the future, and keeping them within proper limits. Budgets and standards are the principal techniques for the purpose.
- (iv) *Cost Accumulation and Allocation:* Cost accounting is largely considered as the practice of accumulating individual product costs. After the accumulation, transfer of the cost of a good or services from a primary account to one or more secondary accounts is done. The aim is to identify the cost with the product or cost objective to which the goods or services have contributed.

2.6 FUNCTIONS OF COST ACCOUNTING

Cost account as a system performs several functions. Some important of them are as follows:

- (i) To determine cost per cent unit and cost structure of each product or service carried out by the enterprise.
- (ii) To facilitate product costing for inventory valuation, and income determination.
- (iii) To detect and prevent areas of wastage especially in material labour, plant and equipment, stores and wages.
- (iv) To provide reliable and timely cost information which guide, and aid in fixing price for the product, job or services rendered.
- (v) To facilitate in pricing decision by distinguishing between fixed and variable costs.
- (vi) To ascertain the profitability of each product, process or service rendered so as to help in maximizing the profit of the enterprise.
- (vii) To accumulate costs for assessing operating efficiency. Cost accounting is installed for the purpose of gathering costs for

manufacturing, constructing and/or selling goods and services. Once the costs are ascertained by products and division, inter firm and intra-firm comparison can be made to evaluate the operating efficiency.

- (viii) To provide cost data for submission of tenders, and acceptance of government and other contracts.
- (ix) To make special studies and investigations for some non-repetitive decisions. Special studies could be required for pricing of new products and services wage compensation plans, changes in method of distribution and for many situations.
- (x) To advise management on expansion or construction programmes, replacement of machines and equipments, buying and leasing of plant and equipments, including proposed capital products.
- (xi) To control and limit cost. Cost accounting and cost reduction is most important function of cost accounting. Unless strictly controlled, costs have a tendency or crossing the limits. Properly collected cost data helps in keeping costs at a minimum possible level.
- (xii) To permit the establishment of uniform costing system for inter-firm comparison.
- (xiii) To help in decision-making by giving a basis for identifying the cost implication of alternative courses of action. Such courses of action may be:
 - (a) Making or buying from outside suppliers;
 - (b) Shutting down or operating at a loss; and
 - (c) Replacement of plant, machinery, and equipment.
- (xiv) To assist management in the formulation of business strategy, and the preparation of short-range and long-range plans.

2.7 DEFERENCE BETWEEN COST ACCOUNTING AND FINANCIAL ACCOUNTING

Financial and cost accounting represent two sub-fields of accounting. Financial accounting is the method or process of recording classifying and summarizing in a significant manner and in terms of money transactions events. These have to be, in part at least, of financial character. It also interprets the results thereof. Cost accounting, on the other hand, is the method or process that records, collects, classifies and allocates appropriately expenditure, for the determination of costs of products and services. The definition of the two branches of accounting, therefore, reveals a large common area between the two, including of course, their language and philosophy. Using money as a measuring rod, both collect, analyse and report information about a business entry and its operations. But the emphasis of the two widely differs. Some points of difference between cost accounting and financial accounting are given below:

	Financial Accounting		Cost Accounting
1.	It provides consolidated information/ reports to parties external to the business from regarding its operations and financial conditions. Such parties include share holders, bankers, creditors, debenture holders, government and tax authorities.	1.	The focus of cost accounting is essentially internal. It tends to provide information about costs, and cost estimates to the parties within the firm for decision-making.
2.	It confines itself only to ex-post calculations-financial facts which have taken place in the past.	2.	Its major concern is to make ex-ante calculations those estimates of cost and revenue which pertain to future for the requirements of various levels of management.
3.	It classifies, records, and analyses the financial transactions in a subjective manner, i.e., accounting to the nature of expenses.	3.	The classification, recording and analysis of cost/expenditure is in an objective manner, i.e. according to the purpose for which cost are incurred.
4.	Various accounts are kept in such a way as to meet the requirements of Companies Act., Income Act, and other regulatory agencies.	4.	Various accounts are kept to meet the internal requirements of the firm. However the Companies Act has made obligatory to keep

			cost records in many manufacturing companies.
5.	It lays emphasis on recording aspect without attaching much importance to control part.	5.	It lays emphasis on control or various elements of material, labour and overhead. Standard costing and budgetary control are the main techniques of control.
6.	Annual reporting is a rule in financial accounting.	6.	The reporting period may be a quarter, month, or even a week..
7.	Various annual statements/reports are prepared in a condensed form of what has happened in the past. In a way, it is a post mortem of past figures. Here the approach is of "synthesis".	7.	Report and statement are more detailed and exhaustive and examine the implication of alternative courses of action. Here approach is on "analysis".
8.	Financial accounts disclose the net profit or loss of the firm as a whole.	8.	Cost accounts disclose profit or loss of each product, process, job or service
9.	Stocks are valued at cost or market price, whichever is less.	9.	Stocks are valued at cost
10.	Reports on the financial conditions and profitability of the business firm essentially relate to accountability of the managers to its owners.	10.	Detailed reports and analysis of costs are done with a view to control costs and determine responsibility at various levels of management.
11.	The reliance of financial accounting is on accounting conventions, concepts and legal requirements.	11.	Cost accounting is governed by the form of products and process of the business within which it operates.
12.	Generally, financial accounts are too infrequently compiled, and too late to be of prime value in cost control.	12.	Reports are frequently compiled with a view to control cost and reduction.
13.	It is very much constrained apart from the conventional accounting principles that are prescribed by the professional bodies, the contents of financial accounts are prescribed, to a large extent, by law. The users are vast and varied.	13.	It is not so constrained as financial accounting. Cost accountant faces one class of users, viz., management. They are free to provide information using appropriate techniques in assisting management techniques in assisting management in operating the firm.
14.	It concerns mainly with income determination.	14.	It is concerned with the composition and control of costs.

The distinguishing features of financial accounting and cost accounting as mentioned above should not allow to believe that they are isolated from each other. Once financial accounts have ascertained profit, cost accountants precede to analyse it. The analysis performed by the cost accountants enables that to show not only whether a profit has been made by the firm as a whole, but whether a profit has been made by each product, job or process. Such analysis helps management in determining the level of output and products which should lead to the most desirable level of operations.

2.8 ADVANTAGES AND USES OF COST ACCOUNTING

Cost accounting provide tremendous help to a business in its routine and non-routine decision. The primary advantage of cost accounting of course, is that it shows precisely where costs are incurred, giving a realistic basis for cost-cutting. It enables management to attribute cost to those units responsible for incurring them. To give management the cost information it needs, cost accounting supplies periodic accounting summaries, including studies, of costs by products, cost trends, and inefficient production operations. Cost accounting determines the profitability of products being made and sold. Apart from these, cost accounting contributes significantly in the following spheres:

- (i) Reducing cost by comparing budgeted costs with the actual.
- (ii) Increasing production by comparing records of output per cent man and per cent unit with predetermined standards.
- (iii) Developing sale and pricing strategic.
- (iv) Providing fair and accurate performance records.
- (v) Creating a competitive spirit between organizational units.
- (vi) Balancing production between departments, and keeping materials following evenly throughout.
- (vii) Establishing quality standards.
- (viii) Determining anticipated profit form varying production levels.
- (ix) Locating appropriate operations for automation or mechanization.
- (x) Elimination of waste of idle time, machinery and equipment.
- (xi) Reconciliation of cost and financial results.
- (xii) Estimates and bids – based on past performance.

- (xiii) Establishing comparative profitability of various products, processes, jobs and indicating areas of losses.
- (xiv) Cost control and cost reduction.
- (xv) Analysis of overhead costs between the various departments/sections, facilitate comparison, and highlighting possible cost savings.
- (xvi) Cost information can be used as a basis for budgetary control and standard costing.
- (xvii) Comparative cost information can be generated between: (a) products; (b) periods, and (c) departments/sections.
- (xviii) Budgeted information for sales, production requirements, material usage, and labour hours can assist in the preparation of production planning schedules for the firm and various departments/sections.

2.9 SPECIFIC COST SYSTEMS

Having discussed the basic method and techniques of cost, let us look into other specific types of cost systems development on the principle of different cost for different purpose. As the word "cost" can rarely stand alone, every prefix and suffix changes its connotation. Some of the frequently used terms not explained earlier are briefly mentioned as follows

- A. **Opportunity cost:** it is the value of a benefit sacrificed in favour of an alternative course of action. It is the measurable advantage foregone as a result of the rejection of best alternative uses of resource, whether of materials, labour or facilities. This cost does not involve any cash outlay and is computed only for the purpose of comparison in the context of managerial decisions. The concept recognises that resource is scarce and has alternative uses.
- B. **Imputed or Notional Cost:** It is a hypothetical cost taken into account in a particular situation to represent a benefit enjoyed by an entity in respect of which no actual expense is incurred. For example, interest on own capital, rent on own premises, etc. are not included in financial accounts, but for determining comparative cost may be included in costs.
- C. **Out of Pocket cost:** It is the opposite of imputed cost. This is the portion of cost which represents actual cash outlay. Out-of-pocket cost is very much

relevant in price fixation during trade depression or when a make or buy decision is to be made.

- D. *Sunk cost*:** It represents historical costs, incurred in the past and is irrevocable in a given situation. Hence, a sunk cost is not relevant to current decision making. Generally the book value of an asset is treated as sunk cost, while considering the replacement of the asset.
- E. *Relevant Cost*:** Costs that are affected by decision are relevant costs. These are expected future costs, that will differ between alternatives. Future variable costs generally become relevant for decision making, while fixed costs may be irrelevant, if they do not change in total. In the same way if an item of future cost remains same for two or more alternatives, it becomes irrelevant for the decision making.
- F. *Replacement cost* :** It is the current market cost of replacing an asset or a material.
- G. *Policy cost*:** Costs incurred as a result of particular policy decision are policy costs. For example, ownership of assets will create a charge for depreciation. Hiring a new office will create a charge for rent. Such depreciation and rent will be policy costs. Policy costs are fixed or period costs.
- H. *Discretionary cost*:** Discretionary costs are those which arise from yearly budget appropriation and reflect management policy, having no direct input output relationship between their costs and activity volume. Examples are training expenses, advertisement Employee welfare expenses. This is also termed as managed or programmed cost.
- I. *Engineered cost*:** It refers to any cost that has an explicit and specified physical relation with the selected measure of activity. Such a relationship is established either through engineering analysis or analysis of past data. Examples are direct material direct labour.
- J. *Avoidable cost*:** Costs that are specifically incurred of an activity or sector of a business and can be identified with the activity and such costs would be avoided, if the activity or the sector of the business does not exist are avoidable costs. For example, the cost of a machine hire specially to make a

particular product will be avoided by discontinuing production of that product, and therefore, is an avoidable cost.

- K. Unavoidable cost:** Common costs apportioned to a particular activity or a segment of a business is usually unavoidable cost, because total common costs cannot be avoided or even reduced even if that activity or sector does not exist. For example, rent of factory premises apportioned to various activities in unavoidable cost for a particular activity, say machine shop, because a decision to discontinue the machine shop will not help reducing rent of the factory.
- L. Common cost:** these are costs which are incurred collectively for a number of cost centres and are required to be suitably apportioned for determining the cost of individual cost centres. For example, rent of the factory premises may be apportioned over production and service cost centres on the basis of area.
- M. Traceable cost:** This is cost which is easily identifiable with a department process or product. This is just the opposite of common cost.
- N. Joint cost:** Joint cost is the cost incurred up to the split off point between individual joint products arising out of a production process. When joint products and/or by products are processed from the same material and common conversion costs are incurred for these products, the main problem is to apportion joint cost incurred up to the split off point to joint products.
- O. Step cost:** Step cost are those costs which increase in steps. These costs remain constant over small ranges of output but the cost increase by discrete amounts as activity moves from one range to the next. For example, supervisory expenses, light and heating, etc. will increase when a second shift is started to cope up with additional orders.

2.10 INSTALLATION OF COSTING SYSTEM

Having established the need for a cost department in an organisation, let us find out the method of installation of a cost system. Obviously, it will depend on the objectives of costing, the nature of business and information flow system.

The system will be simple, if object is simple like only price fixing. It aims at controlling cost and measuring efficiency of operations, the requirements

will be different. If it is installed as per legal requirement, then it must satisfy the legal needs. The nature of the business will again indicate the degree of complexity of the system. The information flow will depend on the levels of management, who will receive information and the periodicity of reporting required.

In most industries products, cost accounting record rules as prescribed by the Government are to be maintained. In such cases care must be taken so that prescribed proforma can be filled in from the cost records/books of accounts so maintained.

It is evident that installing a good cost system is quite a challenging task. The three fundamental requirements are as follows:-

- (i) Organisation chart--showing the lines of authority and delegation of responsibility.
- (ii) Departmentalization--dividing the organisation into production and service cost centre, to which expenses are charged.
- (iii) Chart of accounts--showing control accounts for the elements of cost as well as expense items, so as to enable collection and classification of costs both expense-wise and cost centre-wise.

The system requires total involvement by all the beneficiaries i.e. sales, production engineering, purchase, personnel, quality control departments. The success of the system will finally depend on the top management which must extend full support to the system.

In actual handling of the installation work, the following technical aspects are to be carefully considered.

- ❖ to study the existing organization chart and layout of the factory.
- ❖ to follow the production process right from the production planning, purchase and storage of materials, issues of materials to production, process from initial till primary and secondary packing and loading on transport for outsiders.
- ❖ to examine documents and reports prepared and issued by each department, including records maintained for returns furnished with the Government and outsiders.

- ❖ to interact with various levels of management to find out their expectations of the system.

Finally, the system has to be developed keeping the following factors in view:

- ❖ The system should be simple and easy to operate. Complexity should be avoided.
- ❖ The system should give accurate, timely and adequate information.
- ❖ The system should be elastic and capable of adopting to changed situation.
- ❖ The system should be cost-effective. It should yield a much higher return on capital invested in installing and running the department.

Check your Progress: 1

A company manufactures and retails clothing.

You are required to group the costs which are listed below are numbered 1 to 20 into the following classification (each cost is intended to belong to only one classification).

(i) Direct materials, (ii) Direct labour, (iii) Direct expenses, (iv) Indirect production overhead, (v) Research and development costs, (vi) Selling and distribution costs, (vii) Administration costs, (viii) Finance costs

1. Lubricant for sewing machines
2. Floppy disks for general office computer
3. Maintenance contract for general office photocopying machine
4. Telephone rental plus metered calls
5. Interest on bank overdraft
6. Performing rights society charge for music broadcast throughout the factory
7. Market research undertaken prior to a new product

8. Wages of security guards for factory.
9. Carriage on purchases of basis raw material.
10. Royalty payable on number of units of product XY produced.
11. Road fund licenses for delivery vehicles
12. Parcels sent to customers.
13. Cost of advertising products on television
14. Audit fees
15. Chief accountant's salary
16. Wages of operatives in the cutting department
17. Cost of painting advertising slogans on delivery vans
18. Wages of storekeepers in materials store
19. Wages of fork lift truck drivers who handle raw materials

Developing a new product in the laboratory

2.11 MATERIAL COST MANAGEMENT

Material Cost

Having discussed about the basic principles, methods and objectives of cost accounting. We now turn to study the details of each aspect of costing. To start with, each element of cost will be taken up separately. Let us begin with the first element of cost that is material.

Material is the most significant element of cost and accounts for anywhere between 40% to 70% of the cost of production. Cost control activities are, therefore, directed mostly towards selection, purchase, storage and consumption of material.

The following are the **salient features of material cost control**:

- (a) The quality and specification of materials shall commensurate with the requirement of the product, so that neither too expensive or superior nor cheap or inferior material shall be selected for use in product.
- (b) The purchasing shall aim at minimum price to suppliers and timely procurement and shall avoid urgent purchase at higher cost.

- (c) Storage of material shall be such that there will be neither overstocking, the thereby blocking Capital, nor running out of stock and creating interruption in production process.
- (d) Wastage and losses shall be avoided at every stage of operation i.e. from storing till usage in production.
- (e) Materials should be classified and accounted for both in physical units and value in such a way that information about availability in stock can be obtained promptly so as to assist production, planning as well as timely buying.

Direct and Indirect Material Cost

Materials or stores control relates to both direct and indirect materials. Direct material are those materials which enter into and form part of the product, such as flour, fat and sugar in biscuits, and include.

- (a) all materials specially purchased for a job order or a process.
- (b) all material issued from the stores against a particular job order number or process.
- (c) all components or assembly parts purchased for use in the hobs and process directly.
- (d) all material or processed materials transferred from one process or operation to the other, and
- (e) all primary packing materials such as poly bag, gunny bag cardboard box, etc. indirect materials are those which cannot be traced as a part of the product, such as.

- (a) Consumable stores used in the operation.

- (b) Lubricating oil, grease, fuel oil, etc.

- (c) Tools, jigs, and fixtures, etc.

- (d) Sundry stores of small value like cotton waste, broom stick, etc.

Grouping of material under direct and indirect may often become a matter of convenience, and materials of small value may not be treated as direct cost even if it is possible to identify the same. For example, thread used in stitching a shirt may be calculated and charged as direct material cost, but the cost of such collection will not justify the segregation. Costing system has to be cost-effective.

Material Cost Control

Material cost control involves the following activities, viz.

- (a) Purchase and procurement
- (b) Receipt and inspection
- (c) Storage, Issue and consumption
- (d) Stock control
- (e) Valuation and accounting

2.12 LABOUR COST

Labour cost is a significant element of cost specially in an organisation using more manual operations. It is a cost of human Endeavour in the product and requires coordinated efforts for its control. The management objective of keeping labour cost as low as possible is achieved by balancing productivity with wages. The object is often achieved by paying higher wages to limited satisfied workmen with high productivity. Low wages do not necessarily mean low labour cost. In recent labour agreements, it has been found that substantial increase in wage has been granted against corresponding increase productivity, thereby reducing labour cost per cent unit.

The gain is reflected both the labour cost as well as in overheads expense per cent unit, since overheads are distributed over larger volume. Again, the productivity of labour is quite flexible. Given right type of motivation and incentive, it can reach amazing scale. It does not have any limitation like machines. Lastly, in India, under existing regulation, wages may be considered as fixed cost or committed cost rather than discretionary cost. Once hired, it is very difficult to remove a worker, and therefore, efforts should be made to make best use by imparting proper training, giving better tools and providing favorable working conditions. To this end in view, the management has to design methods of controlling labour cost.

In a large organisation, the control of labour cost involves the coordinated efforts of the following departments:-

- (a) **Personnel department** — This department is responsible for manpower planning, recruitment, training, maintaining records of staff and workmen

and reporting to chief inspector of factories and to top management on performance, overtime, absenteeism. Leave, etc.

- (b) **Industrial engineering department** — This department prepares plans and specification of each job, supervises production activities, undertakes time and motion studies, performs job-analysis, etc
- (c) **Time-office** — This department is primarily responsible for collections of date relation to attendance, time spent on jobs or process by the workmen, and providing information on attendance and leave to Payroll department.
- (d) **Payroll department** — This department is responsible for computing total and new earnings each worker, preparation of payroll and maintenance of various records relating to payroll.
- (e) **Cost department** — This department collects and classifies all cost data relating to labour utilization by department, and allocates them to respective job or process as per cent available documents.

Direct and Indirect Labour Cost

Labour cost may be classified into direct and indirect labour. Direct labour refers to the time spend in altering the construction, composition, conformation or condition of the products manufactured. Thus, the time spent by a worker, identifiable with a particular job or process or operation is a direct labour and is considered directly variable with the output. All other labour hours spend for the running of the factory in general, and cannot be directly identified with a job or process or operation are treated as Indirect labour. Examples of indirect labour are salaries and wages paid to Inspectors, supervisors, maintenance staff, assistants in purchase, stores and offices, security staff etc. Again, workers —of production department engaged in productive job or process are called direct workers. Labour hours of direct workers, which cannot be identified with a job or process, such as idle time, waiting time, etc. shall be treated as Indirect labour. Same treatment is made when direct workers assist maintenance staff in machine repairs. Strictly speaking the distinction between direct and indirect labour depends on the nature of work, practicability and expediency, the distinction is importance because while direct labour is charged to product cost, indirect labour

is treated as a part of overhead expense. Direct labour being variable can be easily controlled. But indirect labour cost has to be controlled by preparing budget for each department and comparing actual against budget periodically.

Remuneration Methods and Incentive Schemes

Remuneration is the reward for labour and service while incentives are stimulation for extra effort to perform more efficiently by way of monetary and/or non-monetary inducements. Remuneration includes salaries and wages, commission, various allowances and statutory bonus. Monetary incentives refer to those payments which are made in excess over time-rates and piece-rates, and are related to the output of either an individual or a group. We shall discuss in detail afterwards.

Remuneration Systems

Wages are paid either on time basis or on output basis. When employees are paid as per cent hours worked irrespective of the quantum of output produced, the system is called time-rate. When payment is made on the basis of production or output only, it is called piece-rate. A combination of both time-rate is also used. When incentives and bonus are added, various methods of remuneration may be obtained, which are classified as follows:

(A) Time rates

i) Ordinary level

ii) High way level

iii) Graduated

B) Piece

i) Straight piece rate

ii) With guaranteed daily rate.

iii) Differential piece rates

○ Taylor Plan

○ Merrick Plan

(C) Combination of Time & Piece Rates

i) Emerson's efficiency scheme

ii) Gantt task bonus scheme

iii) Bedaux scheme

(D) Bonus System

Individual bonus —

- i) Halsey scheme
- ii) Halsey Weir scheme
- iii) Rowan scheme
- iv) Barth scheme
- v) Accelerating premium bonus.

(E) Bonus System

Group bonus —

- i) Priestman's production bonus
- ii) Rucker plan
- iii) Scanlon plan
- iv) Towne gain sharing plan

(F) Other Incentive Schemes

Monetary —

- i) Profit-sharing
- ii) Co-partnership.

2.13 OVERHEADS

Scope and Objectives of Overhead

Overhead is the aggregate of indirect material, indirect labour and indirect expenses. It refers to any cost which is not directly attributable to a cost unit. The term 'indirect' means that which cannot be allocated, but which can be apportioned to or absorbed by cost centres or cost units. The distinction between direct and indirect material, labour and expenses have been explained earlier. The terms 'burden', 'on cost', 'Supplementary cost', 'Nonproductive cost', 'Loading', 'Indirect expenses', etc. are used interchangeably for 'overhead'.

Overhead, in fact, consists of two parts. One, relating to the product, and the other relating to the facilities and services maintained for the running of the organisation. While the former is incurred when production is carried on (by way

of indirect material labour and expenses), the latter is incurred even when production is not undertaken. The expenses incurred for maintaining a factory shed, office building, stores, machine shop, canteen, dispensary, generation room, boiler, etc. are all included in overheads as such facilities are required to keep the unit in incurred for administration of manufacturing and selling and distribution of products are included in overhead. If selling and distribution are undertaken by the organization, then a sizeable amount of the expenses enter into overheads, since only a small portion of the expenses incurred can be identified as direct cost of product.

Overhead cost is, therefore, a group of expenses, which are not identifiable with the cost unit, but are incurred generally for the manufacturing and selling activities of the organization and can be apportioned to and absorbed by the cost units. It is a distinct element of cost, and needs different treatment in accounting and control compared to direct cost elements. Further, with automation and introduction of new technology, manufacturing activities are increasingly depending on machineries rather than human effort. As a result, overhead expenses are increase continuously. In a modern unit, overheads could be as high as material cost. That is why proper and effective accounting and control of overheads is so much needed today.

Classification of Overheads

In order to have a proper accounting and control, careful classification of overheads is necessary Overhead can be classified as—

- (a) **Classification of overhead by elements or nature of expense:** All over expenses can be classified element wise into indirect material, indirect labour and indirect expenses as well as by nature of expense. e.g. consumable stores, repair-parts, salaries, maintenance, depreciation, etc. Even when overheads are classified functionally, the expenses are classified interested contract he same order within each group as will be indicated below.

(b) **Classification of overhead by functions.** A manufacturing organization is normally divided into various functional divisions, such as manufacturing, selling, administration, etc. Overhead expenses relating to each of the functions division can be grouped as –

- (i) Manufacturing or production or factory overhead,
- (ii) Administration overhead,
- (iii) Selling overhead,
- (iv) Distribution overhead, and
- (v) Research and development overhead.

Manufacturing Overhead is the total indirect costs associated with manufacturing activities, the sequence of which begins with the procurement of materials and ends with the primary packing of the product. Examples are as follows: indirect material such as lubricants, cotton waste, and other factory supplies, direct material of small individual value, repair parts, wages of indirect workers, supervisory salaries, salaries and wages relating to service cost centres, canteen and other welfare expenses, factory rent, rates, lighting and heating, power and fuel, depreciation of factory building, depreciation of plant and machinery and other equipments, expenses connected with the administration of factory.

Administration Overhead is the total costs of formulating the policy, directing the organisation and controlling the operation of an undertaking which is not directly related to production, selling, distribution, research or development activity or function. Examples of such expenses as follows:

Office supplies, printing and stationery, salaries to office staff, directors remuneration office rent and rates, office lighting, heating and air conditioning, postage, telephone & courier service, depreciation, repair and maintenance of office building, equipments, furniture and office machines, audit fees, legal charges, bank charges and interest.

Selling Overhead refers to those expenses which are associated with the marketing and selling activities. For example:

Salaries and commission of salesmen, selling agents, etc.

Traveling expenses, sales office expenses

Advertisement and publicity

Market research

Bad debts

Brokerage

Distribution Overhead relates to total indirect cost associated with the distribution of finished products, beginning with the primary packed product available for dispatch and ending with making reconditioned returnable empty container, if any, available for reuse. Examples are:

Secondary packing materials.

Packing charges.

Salaries and wages of distribution staff.

Carriage and freight outwards.

Warehousing charges, insurance.

Depreciation, repairs and maintenance, insurance and cost of operating distribution vehicles.

Research and Development Overhead is the total indirect costs incurred for the research and development activities undertaken by the organisation for the development of new products, improvement of existing of existing products, substitution of material and methods, etc. If the total cost is not very sizeable and significant, it is often merged with manufacturing or administrative overheads.

(c) Classification of overhead according to their behavior with changes in the volume of production. Some of the overhead expenses tend to vary with the changes in the level of activity or production, while some tend to remain practically unaltered whatever may be the volume of output. Some of the expenses remain partly variable with the production and partly unchanged with the change in activity. Overheads can therefore, be classified into —

- i) Fixed overhead,
- ii) Variable overhead,
- iii) Semi-fixed or semi-variable overhead.

The above classification is extremely important for cost control and decision making.

- (i) **Fixed overhead.** This represents overhead expenses which tend to remain unaffected by the fluctuations in the volume of production or sale within a insurance, executive salaries, audit fees, etc. Fixed cost is also termed as period cost or policy cost, since most of the expenses are incurred over a period of time and arising out of the policy of the management. Fixed overhead remain unchanged within a relevant range of activity, because is the activity exceeds or recedes the range, expenses on certain items of fixed overheads may increase or decrease. Again, fixed overheads changes with the change in price levels. For example, prices of indirect materials, executive and supervisory salaries, insurance premia, power tariff, etc. may change over a period of time, resulting in the change of fixed overheads. However, such changes do not occur in a short period, say, one year. Hence, fixed overhead remain unchanged with the increase or decrease of output in a short period, but the fixed overhead cost per cent unit changes with the changes in the activity level.
- (ii) **Variable overhead.** Variable overhead expenses tend to follow (in the short run) the level of activity. The variation may not always be in the same proportion as the production or sales volume changes, but by and large, there is a linear relationship between the variable overheads and output. Examples of variable overheads are indirect material, indirect labour, power and fuel, lighting and heating expenses, salesmen's commission, etc. Although the amount of variable overhead changes, the cost per unit of output tends to remain constant at different levels of output. This is, again, true only within a limited range of output.

2.14 PRODUCTION OVERHEAD

The objectives of overhead accounting is to charge an equitable portion of overhead expenses to each of the cost units, so that cost of production can be ascertained. (Cost of production = Prime cost + Production overheads) The following steps are involved in the accounting of production overheads —

- (a) Departmentalisation.
- (b) Classification and collection of overhead.
- (c) Allocation and apportionment of overhead.
- (d) Distribution of overhead to production and service cost centres.
- (e) Redistribution of service cost centre expenses to the departments using the services tills all expenses are distributed over production cost centres.
- (f) Absorption of overheads by production units.

(a) Departmentalization.

As explained earlier, departmentalization is the complete division of the factory into production and service cost centres, where expenses are incurred. All documents, as explained in para 5.4, shall contain cost centre reference for correct collection of cost.

(b) Classification and collection of overhead

Classification and collection of overhead have already been explained in detail earlier in Para 5.0 and 6.0.

(c) Allocation and apportionment of overheads.

Allocation is the process of identification of overheads with cost centres. Expenses which cannot be identified with product or cost unit can be allocated to a specific cost centre, if latter can be identified. For example, wages to indirect workers depreciation and insurance of plant and machinery, fuel oil for boilers, etc are instances of expenses which can be directly allocated to the cost centres. However, indirect expenses, such as rent, rates, electricity, telephone charges, factory manager's salary, etc. incurred for the entire factory cannot be centres on some suitable basis for benefits received.

Apportionments is defines as “the allotment of two or more cost centres of proportions of the common items of cost on the estimated basis of benefit received” (CIMA official terminology). The basis should be selected carefully, so that the proportion of allotment represents the proportion of benefit received.

The following are some of the common basis of apportionment of overheads:

<i>Basis of apportionment</i>	<i>Items of expenditure</i>
1. Floor area or cubic content	Rent, rates, taxes, maintenance of building, depreciation and insurance of building, lighting and heating, electricity.
2. Number of employees	Expenses association with workmen such as supervision, canteen expenses, recreation expense, timekeeping, ESIC, etc.
3. Capital value	Depreciation and insurance of plant and machinery equipments and furniture
4. Value of materials	Material handling.
5. Horse-power hours, Kwh	Power
6. No. of material requisitions	Storekeeping expenses
7. Direct machine hour, direct labour hr., direct wages	Other overhead expenses

**** Students are advised to prepare a chart with as many bases available from various books’**

2.15 ABSORPTION OF OVERHEADS BY PRODUCTS

The object of absorption of overheads is to changes an equitable proportion of the total factory overheads to each unit of production. The total factory overheads are distributed to the production cost centres (a) by allocating departmental expenses, (b) by apportioning common costs along with service department expenses, and (c) by redistributing service department cost to the production cost centres. The total overhead of each production cost centre will be absorbed or recovered by the output of the department concerned. For this, the

suitable base, such as, production unit, direct labour hour, machine hour, direct wages, etc. is to be determined, and the total departmental overheads are to be divided by the base to arrive at recovery or absorption rate at which the expense are to be applied to the production units. The rate may be actual or predetermined. Again, the rate may be a single or blanket rate to the entire factory or separate rates for each production departments or cost centres.

Actual Vs. Pre-determined Rate

Actual overhead recovery rate is computed by dividing actual overheads cost by actual base in a particular period. It is obvious that one has to wait till the close of the accounting period for calculating actual rate.

Predetermined overhead recovery rate, on the other hand, is determined before the commencement of the period during which the same will be used. The rate is computed with reference to the budgeted overhead cost for the year and a predetermined quantity of the base (say, labour hour) for the year, which will be used as a denominator.

When historical cost ascertainment is the sole objective, actual overhead rate may lead to desired result. Otherwise, considerable delay will occur in arriving at the production using actual overhead rate. Even if the actual rate is calculated on a monthly basis, it will not serve the purpose due to the following reasons:

- (a) Some of the expenses are not evenly incurred throughout the year. Examples are repairs and maintenance, lighting and heating, etc.
- (b) Production volume fluctuates month to month due to more or less working days in a month or seasonal nature of product. As a result monthly overhead rates will fluctuate and consequently, production cost will vary from month to month, when such fluctuating rates will be applied to products in busy seasons, the cost will be low, while in slack season, the cost will be higher.

Predetermined overhead absorption rates, on the other hand, have the following advantages.

- a) Product cost can be worked out promptly.

- b) Product cost can be estimate prior to commencement of production and can help the management in price quotation and fixing selling price well in advance.
- c) Product costs are not affected unnecessarily due to the vagaries of the calendar or seasonal fluctuations.
- d) Use of predetermined rate will provide data available for cost control as well as decision making.
- e) By using normal capacity as base while determining rate, losses due to idle capacity is highlighted and real cost of production is reflected.

In the light of above discussion, the method of predetermined overheads absorption rate appears to be more useful.

2.16 COST SHEET

Cost sheet

Meaning: A cost sheet is statement which shows the break-up and build-up of costs. It is a document which provides for the assembly of the detailed cost of cost centre or a cost unit.

Uses: The following are the uses of the Cost Sheet.

- (a) Presentation of Cost information.
- (b) Determination of Selling Price.
- (c) Ascertainment of profitability.
- (d) Product-wise and Location-wise Cost Analysis.
- (e) Inter-firm and intra-firm Cost Comparison.
- (f) Preparation of Cost Estimates for submitting tenders/quotations.
- (g) Preparation of Budgets.
- (h) Disclosure of operational efficiency for Cost Control.

The proforma of the Cost Sheet:

The proforma of the **Simple Cost Sheet** i.e. without stocks, is as under:

	Direct Materials
	Direct Labour
	Direct Expenses
	Prime Cost
<i>Add:</i>	Factory overheads (Works OH/Manufacturing OH / Production OH)

	Factory Cost /Works cost
<i>Add:</i>	Administration Overheads
	Cost of Production
<i>Add:</i>	Selling and Distribution Overheads
	Cost of Sales
<i>Add:</i>	Profit /Loss (Balancing Figure)
	Sales

The Proforma of the **Comprehensive Cost Sheet** i.e. with stocks, is as under:

	Opening Stock of Raw Materials
<i>Add:</i>	Purchases (Including Carriage Inwards, Transit, Insurance etc.)
<i>Less:</i>	Closing Stock of Ram Materials
	Direct Material Consumed
	Direct Labour
	Direct Expenses
	Prime Cost
<i>Add:</i>	Factory Overhead (Works OH/ Manufacturing OH/ Production OH)
<i>Add:</i>	Opening Stock of Work in Progress
<i>Less:</i>	Closing Stock of Work in Progress
	Factory Cost / Works Cost
<i>Add:</i>	Administration Overheads
	Cost of Production
<i>Less:</i>	Opening Stock of Finished Goods
<i>Less:</i>	Closing Stock of Finished Goods
	Cost of Goods Sold
<i>Add:</i>	Selling and Distribution Overheads
	Cost of Sales
<i>Add:</i>	Profit / Loss (Balancing Figure)
	Sales

List a few items that are not regarded as “Cost” and not included in the Cost Sheet.

Expenses or Income of purely financial nature e.g. dividends and rent received, cash discount allowed, etc.

Expenses or profits of capital nature like profit or loss on sale of investments, plant and equipment, etc.

Items not representing actual costs but dependent on arbitrary decision and policies of the management, e.g., an unreasonably high salary to the managing director, providing for depreciation at a rate exceeding the economic rate.

Appropriation of profits for dividends, payment of income tax and transfers to reserves.

Amounts representing loss on account of inefficiency of particular activity e.g. bad debts as a result of inefficient credit management.

Abnormal expenditures and costs e.g. penalties, fines, interest and other imputed costs, on the ground that they distort comparison. [There are also strong for including interest a cost].

Imputed items that are not actually incurred by the firm but constitute arbitrary charges against profit.

Illustration 1: Preparation of Cost Sheet. Nov 2003

A fire occurred in the factory premises on October 31, 2003. The accounting records have been destroyed. Certain Accounting records were kept in another building. The reveal the following for the period September 1, 2003 to October 31, 2003.

i.	Direct Material Purchased	Rs.2,50,000
ii	Work in process inventory on 1.9.2003	Rs.40,000
iii.	Direct Material inventory on 1.9.2003	Rs.20,000
iv	Finished Goods inventory on 1.9.2003	Rs.37,750
v.	Indirect Manufacturing Costs	40% of Conversion Cost
vi.	Sales Revenues	Rs.7,50,000
vii	Direct Manufacturing Labour	Rs.2,22,250
viii	Prime Costs	Rs.3,97,750
ix	Gross Margin percentage based on Revenues	30%
x	Cost of Goods available for sale	Rs.5,55,775

The loss is fully covered by insurance. The insurance company wants to know the historical cost of the inventories as a basis for negotiating a settlement,

although the settlement is actually to be based on replacement cost, not historical cost. You are required to compute:

- (i) Finished Goods inventory on 31.10.2003.
- (ii) Work in process inventory on 31.10.2003.
- (iii) Direct Material inventory on 31.10.2003.

Solution: Cost Sheet for the period ended 31st October

			Rs.
	Opening Stock of Raw Materials	(given)	20,000
<i>Add:</i>	Purchases	(given)	2,50,000
			2,70,000
<i>Less:</i>	Closing Stock of Ram Materials	(bal. fig.)	94,500
	Direct Material consumed	(Prime Cost less Labour)	1,75,000
	Direct Labour	(given)	2,22,250
	PRIME COST	(given)	3,97,750
<i>Add:</i>	Factory Overheads	$(2,22,250 / 60\% \times 40\%)$	1,48,167
	Opening stock of work-in-progress	(given)	40,000
<i>Less:</i>	Closing stock of work-in-progress	(bal. fig)	5,85,917
	FACTORY COST	(reverse working)	67,892
<i>Add:</i>	Administration Overheads	(ignored)	5,18,025
	COST OF PRODUCTION	(ignored)	Nil
<i>Add:</i>	Opening Stock of Finished Goods	(given)	37,750
		(given)	5,55,775
<i>Less:</i>	Closing Stock of Finished Goods	(bal. fig)	30,775
	COST OF SALES	(Sales less 30%)	5,25,000
<i>Add:</i>	Profit	(30% given)	2,25,000
	SALES	(given)	7,50,00

(a) Conversion Cost = Direct Labour + Factor Overhead (i.e. Indirect Manufacturing Costs). Since Factory Overhead is 40%, Labour = 60% of Conversion Costs.

(b) Cost of goods available for sale = Cost of production + Opening Stock of finished goods.

Illustration 2: Preparation of Cost Sheet

From the following particulars, prepare a Cost Statement showing the component of Total Cost and the Profit for the year ended 31st December.

Particulars	On 1 st January	On 31 st December
Stock of Raw Materials	4,00,000	5,00,000
Stock of Finished Goods	60,000	1,50,000
Stock of Work in Progress	1,50,000	1,00,000

Particulars	In Rs.	Particulars	in Rs.
Raw Materials Purchased	47,50,000	Sales for the year	86,00,000
Carriage Inwards	1,25,000	Selling Expenses	92,500
Wages	17,50,000	General Expenses	3,20,000
Works Manager's Salary	3,00,000	Debenture Interest	50,000
Salary-Factory Employees	3,00,000	Dividend Paid	10,000

Particulars	in Rs.	Particulars	in Rs.
Salary-Office Staff	2,00,000	Income-Tax Provision	5,000
Salary-Salesmen	1,00,000	Goodwill Written off	1,00,000
Factory Rent & Insurance	72,500	Sales Tax paid	1,60,000
Power Expenses	95,000	Transfer to Machinery Replacement Fund	1,00,000
Other Production Expenses	4,20,000	Interest on loan	75,000
Bad debts written off	15,000	Bank Charges	5,000
Loose tools written off	10,000	Discount allowed	27,000

Solution:**Cost Sheet for the year ended 31st December**

		Rs.	Rs.
	Opening Stock of Raw Materials	4,00,000	
<i>Add:</i>	Purchases & Carriage Inwards (47,50,000+1,25,000)	48,75,000	
		52,75,000	
<i>Less:</i>	Closing Stock of Ram Materials	(5,00,000)	
	Direct Material consumed		47,75,000
	Direct Wages		17,50,000
	Prime Cost		65,25,000
	Factory Overheads (Schedule A)		11,97,500
	Opening stock of work-in- progress		1,50,000
			78,72,500
<i>Less:</i>	Closing stock of work-in-progress		(1,00,000)
	Factory Cost		77,72,500
<i>Add:</i>	Administration Overheads (Schedule B)		5.25,000
	Cost of Production		82,97,500
<i>Add:</i>	Opening Stock of Finished Goods		60,000
			83,57,500
<i>Less:</i>	Closing Stock of Finished Goods		(1,50,000)
	Cost of Goods sold		82,07,500
<i>Add:</i>	Selling and Distribution Overheads (Schedule C)		1,92,500
	Cost of Sales		84,00,000
<i>Add:</i>	Profit (Balancing Figure)		2,00,000
	Sales		86,00,000

Working Notes:

A. Factory Overheads (in 000's)		B. Administrative Overheads		C. Selling & Distribution OH	
Works Manager's Salary	300.00	Salary-Office Staff	200.00	Salary-Salesmen	100.00
Factory Empl. Salary	300.00	General Expenses	320.00	Selling Expenses	92.50
Factory Rent and Insurance	72.50	Bank Charges	5.00		
Power	95.00				
Other Production Expenses	420.00				
Loose Tools w/off	10.00				
Total	1197.50	Total	525.00	Total	192.50

Items ignored from Cost Sheet:

- (a) Bad Debts —represents loss on accounts of inefficiency of credit management activity.
- (b) Debenture Interest – interest and financial charges not included in cost since they distort comparison.
- (c) Dividend paid – Appropriation of Profit, not a “cost”.
- (d) Income Tax Provision – Profit based outflow, not a “cost” related to product or period.
- (e) Goodwill Written Off – Policy based adjustment entry, not a “cost”
- (f) Sales Tax Paid – Collection and Payment on behalf of Government – not a revenue or expenditure item. Hence, not to be considered.
- (g) Transfer to Reserves – Appropriation of Profit.
- (h) Interest on Loan – Financial nature – hence not considered.

- (i) Discount Allowed – Cost incurred to avoid loss of bad debts, policy based expenditure. Hence differs from firm to firm and therefore not considered.

Illustration 3: Construction of Cost Sheet using relationships

From the following information, prepare the cost sheet with as many details as possible and ascertain the selling price per cent unit of the product.

- ❖ Direct material – 12.5% of Selling Price
- ❖ Direct Labour – 17.5% of Selling Price
- ❖ Production Overheads – $\frac{1}{3}$ rd of Prime Cost
- ❖ Administration Overheads – 50% of Production Cost
- ❖ Profit (Rs.750 per unit) – 15% of Sales

Solution:

Cost Sheet per unit

Particulars	Percentage	Amount in Rs.
Direct Materials	12.5%	625
Direct Labour	17.5%	875
Prime Cost	30.0%	1,500
Factory Overhead ($\frac{1}{3}$ rd of 30)	10.0%	500
Factory Cost	40.0%	2,000
Administration Overhead (See note)	40.0%	2,000
Cost of Production	80.0%	4,000

Particulars	Percentage	Amount in Rs.
Selling Overhead (balance figure)	5.0%	250
Cost of Sales	85.0%	4,250
Profit (given)	15.0%	750
Sales	100.0%	5,000

Note: It is given that Administration OH = 50% of Production Cost i.e. 50% of Cost of Production we know that Cost of Production = Factory Cost + Administrative overhead. Hence, if Administration OH = 50% of Cost of Production, the balance 50% should be Factory Cost. Therefore Factory Cost of Administrative Overhead will be 50% ; 50% or 1:1

Illustration 4: Cost Sheet – Reverse Working – May 1992 adapted

COMPREHENSIVE LTD gives you the following information (figures in Rs.'000s)

(a) From Financial Records:

Sales for the year	75,00	Direct Labour	17,50
Management Expenses	2,50	Selling Expenses	3,50

(b) From inventory Records:

Particulars of Stock	As at 31 December	As at 1 January
Ram Materials	10,60	8.00
Finished Goods	19,00	17,60
W-I-P (50% complete)	14,50	10,50

From analysis of past data: Direct Labour would be 175% of Works Overheads
Cost of Good Sold (excluding Administration Overheads) would be Rs.11,200 per unit
Selling Expenses would be Rs.700 per unit.

You are required to ; Compute the value of material purchased during the year.
Determine the rate of profit on sales. Discuss whether the interest payment of Rs.2,00,000 on working capital would affect the above rate of profit.

Solution

COMPREHENSIVE LIMITED

Cost Sheet for the period 1st Jan to 31st Dec (in Rs.000's)

Note: The Cost Sheet is completed by Reverse Working. Purchases amount is the balancing figure.

		Rs.	Rs.
	Opening Stock of Raw Materials	8.00	
Add:	Purchases (Balancing figure)	36,50	
		44,50	
Less:	Closing Stock of Ram Materials	(10,60)	
	Direct Material consumed		33,90
	Direct Wages (given)		17,50
	PRIME COST		51,40
Add:	Factory Overheads (1,750/175%)[See Note (a)]		10,00
	Opening stock of work-in-progress (given)		10,50
			71,90
Less:	Closing stock of work-in-progress (given)		(14,50)
	FACTORY COST		57,40

<i>Add:</i>	Administration Overheads = (Management Expenses as given)		2,50
	COST OF PRODUCTION		59,90
<i>Add:</i>	Opening Stock of Finished Goods (given)		17,60
			77,50
<i>Less:</i>	Closing Stock of Finished Goods (given)		(19,00)
	COST OF GOODS SOLD [See Note ©]		58,50
<i>Add:</i>	Selling and Distribution Overheads (given)		3,50
	COST OF SALES		62,00
<i>Add:</i>	Profit (Balancing Figure)		13,00
	SALES		75,00

Notes:

(a) Direct Labour = 175% of Factory Overhead (given)

Hence, if Direct Labour = 1750, then Factory Overhead = $1750/175\% = \text{Rs. } 10,00$ (in 000's)

(b) Selling Overhead = Rs.700 per unit = Rs.350000 (in total)

Hence, Units Sold = Rs.350000 divided by Rs.700 = 500 units.

© Cost of Goods Sold (excluding Administrative OH) = Rs.11200 per unit

Cost of Goods Sold Less (Administrative Overhead) = $\text{Rs. } 11200 \times \text{Units sold}$

Cost of Goods Sold Less (Administrative Overhead) = $\text{Rs. } 11200 \times 500$

Cost of Goods Sold – 2,50 (in 000's) = 56,00 (in 000's)

Cost of Goods Sold = $56,00 + 2,50 = 58,50$

$$\diamond \text{ Rate of Profit} = \frac{13,00}{75,00} = 17.33\%$$

Interest on Working Capital shall not be considered as "Cost" since it may distort cost comparison. However, for decision-making purposes, interest is an essential element of cost and has to be included to determine relevant costs in a decision.

2.19 METHODS OF COSTING

Different industries follow different methods for ascertaining cost of their products. The method to be adopted by business organisation will depend on the nature of the production and the type of output.

The following are the important methods of costing.

- **Job Costing:** Job costing is concerned with the finding of the cost of each job or work order. This method is followed by those concerns when work is carried on by the customer's request, such as printer general engineering workshop etc. Under this system a job cost sheet is required to be prepared to find out profit or losses for each job or work order.
- **Contract Costing:** Contract costing is applied for contract work like construction of dam building civil engineering contract etc. Each contract or job is treated as a separate cost unit for the cost ascertainment and control.
- **Batch Costing:** A batch is a group of identical products. Under batch costing a batch of similar products is treated as a separate unit for the purpose of ascertaining cost. The total costs of a batch are divided by the total number of units in a batch to arrive at the cost per unit. This type of costing is generally used in industries like bakery, toy manufacturing etc.
- **Process Costing:** This method is used in industries where production is carried on through different stages or processes before becoming a finished product. Costs are determined separately for each process. The main feature of process costing is that the output of one process becomes the raw materials of another process until the final product is obtained. This type of costing is generally used in industries like textile, chemical, paper, oil refining etc.
- **Service (Operating) Costing:** This method is used in those industries which render services instead of producing goods. Under this method the cost of providing a service is also determined. It is also called service costing. The organisation like water supply department, electricity department etc. are the examples of using operating costing.
- **Operation Costing:** This is suitable for industries where production is continuous and units are exactly identical to each other. This method is applied in industries like mines or drilling, cement works etc. Under this system a cost sheet is prepared to find out cost per unit and profits or loss on production.
- **Multiple Costing:** It means a combination of two or more of the above methods of costing. Where a product comprises many assembled parts or components (as in case of motor car) costs have to be ascertained for each component as well as for the finished product. For different components, different methods of costing may be used. It is also known as composite costing. This type of costing is applicable to industries producing motor vehicle, aeroplane, radio, T.V. etc.

Key to Check Your Progress:I1

(i)	Direct material	9
(ii)	Direct labour	16
(iii)	Direct expenses	10
(iv)	Indirect production overhead	1,6,8,18,19
(v)	Research and development costs	20
(vi)	Selling and distribution costs	7,11,12,13,17
(vii)	Administration costs	2,3,4,14,15
(viii)	Finance costs	5

Theory Questions

1. Define the term cost, costing and cost accounting.
2. Explain the term cost with suitable examples
3. What do you mean by cost accounting? State its relationship with financial accounting
4. Discuss briefly its objects and advantages.
5. What do you mean by cost sheet? Draft a specimen cost sheet.
6. Explain the steps that should be taken in order to install an efficient system of costing.
7. Explain the various methods of pricing of issues of materials

Exercise 1: Cost Sheet – Relationship between cost items

The following cost relationships are found to exist in **SIMPLE LTD.**

❖ Direct Material	-	12.5% of Selling Price
❖ Direct Labour	-	17.5% of Selling Price
❖ Production Overheads	-	50% of Prime Cost
❖ Administration O.H	-	40% of Works C

Profit is 20% of Cost of Sales. Draw up the Product Cost Sheet if unit profit is Rs.1,000/-

[Answer: Selling Price = Rs.6000; Selling and Distribution OH (balancing figure) = Rs.1,220 = 20.33% of sales].

Exercise 2: Cost sheet, offer acceptance decision – RTP

New Products Company wishes to launch its product in the market. The estimates of costs are:

a) Direct Materials per unit = Rs.40; (b) Direct Labour per unit = Rs.36; (c) Production OH will be as under:

Production Dept.	OH Rate	Nomal monthly output of OH Rates	Fixed OH included in the overhead	Time required of unit of new product
A	Rs.3.60 per hour	30,000 units	Rs.36,000	5 hours
B	Rs.4.80 per hour	20,000 units	Rs.12,000	2.5 hours
C	Rs.6.00 per hour	40,000 units	Rs.60,000	4 hours

(c) Annual Administration and Selling Expenses application to the new product is Rs.2,50,000.

(d) Estimate Sale Quantity per annum = 50,000 units.

Required:

- ❖ Prepare a cost and compute the unit selling price with a profit margin of 40% of total cost.
- ❖ Advise management whether an offer a foreign buyer, for additional 10,000 units at Rs.125 per unit is acceptable.

[Answer: Cost per unit = Rs.135; Selling price = Rs.189 per unit; Foreign Offer will result in additional profit of Rs.85,000. Hence it should be accepted].

Exercise 3: Estimation of Selling price – OH estimation

Precision Toolings is engaged in the manufacture of special tools as per cent customers' requirements. Their accounts for the previous year show the following information.

Materials Rs.3,50,000 ; Factory overhead Rs.81,000

Labour Rs.2,70,000 and Administration overheads Rs. 56,080.

It is estimated that Rs.1000 in material and Rs.700 in Labour will be required for a tool ordered by Kishore, a new customer. Absorb Factory overheads on the basis of labour and administration overheads on the basis of works cost. What price will guarantee a profit of 12.5% on selling price?

[Answer: FOH = 30% of Labour and AOH = 8% of Factory Cost; Selling Price = Rs.2358]

Exercise 4 : Estimation of Selling Price – Change in volume and cost

ADDLESS Limited manufactured and sold 1,000 Calculators last year. The summarized Trading and Profit and Loss Account is set out below:

Particulars	Amount in Rs.	Particulars	Amount in Rs.
To Cost of Materials	80,000	By Sales	4,00,000
To Direct Wages	1,20,000		
To Manufacturing Expenses	50,000		
To Gross Profit c/d	1,50,000		
Total	4,00,000	Total	4,00,000

Particulars	Amount in Rs.	Particulars	Amount in Rs.
To Staff Salaries	60,000	By Gross Profit b/d	1,50,000
To Rent, rates&insurance	10,000		
Particulars	Amount in Rs.	Particulars	Amount in Rs.
To Selling Expenses	30,000		
To General Expenses	20,000		
To Income Tax Provision	10,000		
To Net Profit	20,000		
Total	1,50,000		

For the next year, it is estimated that:

- Output and sales will be 1,200 Calculations.
- Prices of materials will go up by 20% on the level of previous years.
- Wages will rise by 5%.
- Manufacturing expenses will rise in proportion to the combined cost of material and wages.
- Selling cost per unit will remain unaffected.
- Other expenses will remain constant in total.

Prepare a statement showing the selling price per cent calculator so as to show profit of 10% on selling price.

[Answer: New Selling Price per cent calculator = Rs.425; Total Profit = Rs.51000]

CHAPTER 3 DEPRECIATION

STRUCTURE

3.0	Introduction
3.1	Unit Objectives
3.3	Definition
3.3	Causes of Depreciation
3.4	Effects of not Providing for Depreciation
3.5	Methods of Calculating Depreciation
3.16	ABC Analysis

3.0 INTRODUCTION

Depreciation is the diminution in the value of assets due to use, wear and tear and efflux of time. It is an estimated charge against profit for use of fixed assets. The provision for depreciation is to create funds for replacement of assets. It may either be written off against asset accounts or it may be Department Provision Accounting keeping Asset Account at cost.

3.1 UNIT OBJECTIVES

After studying this chapter you should be able to

- Explain term depreciation and its need
- Explain the different methods of providing depreciation
- Calculate the depreciation and preparation of accounting ledgers for fixed assets and depreciation
- Valuation of stock and stock control under different situation

3.2 DEFINITION

According to International Accounting Standards Committee, "Depreciation is the allocation of depreciable amount of an asset over its estimated useful life. Depreciation for the accounting period is charged to income either directly or indirectly"

According to the Institute of Chartered Accountants of India, "Depreciation is a measure of the wearing out, consumption or other loss of value of a depreciable assets arising from use, effluxion of time or obsolescence through technology and market charges.

3.3 CAUSES OF DEPRECIATION

- Wear and tear is an important cause of depreciation in the case of a tangible fixed asset. It is due to use of the asset.
- Lapse of time: Assets such as lease, copy right, patent etc have a fixed number of years of legal life after the expiry of which they are rendered useless.
- Loss of usefulness occasioned by improved production methods is known as obsolescence.
- Accidents: An asset may reduce in value because of an accident. Accidental loss may be permanent but it is not continuing and a gradual.
- Inadequacy: It refers to the termination of the use of an asset because of growth and changes in the size of the firm.
- Depletion: As asset may get exhausted through working as in the case of mines quarries, oil fields and forests. The natural resources such as minerals, granite oil and timber get exhausted because of extraction and exploitation. These assets are known as wasting assets. The term depletion is correctly used to refer to the expired utility of wasting asset.

3.4 EFFECTS OF NOT PROVIDING FOR DEPRECIATION

- i. Periodic expenses will be understated;
- ii. Profits will be overstated;
- iii. Asset valuation will be overstated;
- iv. Capital depletion will take place;
- v. Cost of production will be understated;
- vi. Price determination will be inappropriate; and
- vii. Net worth will be overstated.

3.5 METHODS OF CALCULATING DEPRECIATION

There are various methods of depreciation, such as, -

- 1) Straight-line method or Fixed installment method – This is simple and most widely used method. An equal portion of the cost of the asset is allocated to each period of use.
- 2) Diminishing/reducing value method

- 3) Annuity method
- 4) Insurance Policy
- 5) Revaluation
- 6) Unit charging systems:
 - i) Production unit.
 - ii) Time unit
- 7) Machine Hour Rate.
- 8) Sum of the digits method.

The entry to depreciation will be :-

Depreciation A/c	Dr
To Respective Asset A/c	

The most commonly methods of depreciation are –

- 1) Straight line method and
- 2) Reducing/Diminishing value method.

For depreciation, Students are advised to go through

- i) International Accounting Standard – 4, and
- ii) Indian Accounting Standard – 6 for a thorough knowledge on the subject.

There are a number of methods of calculating depreciation on the original cost or on the replacement cost of the assets. Each method adopts one or more following principles.

- (a) depreciation is a function of time;
- (b) depreciation is a function of use;
- (c) depreciation is a function of time and use;
- (d) depreciation is function of time and maintenance; and
- (e) depreciation is function of time and interest.

Whatever method is applied in the accounts, it must be suitable to the circumstances prevailing in the organisation. The different methods are discussed as follows:

- (1) **Straight line method:** this is the method of providing for depreciation by means of periodic charged over the assumed or anticipated life of the asset.

Example:

If, C = Cost of the asset depreciated = Rs.10,000.

R = Residual value of the asset = Rs.500.

N = Life of the asset = 4 years.

Then,

D = Proportion of cost of asset depreciated under this method

$$= \frac{C - R}{n \times C} = \frac{10,000 - 500}{4 \times 10,000} = 0.2375 \text{ or } 23.75\%$$

So amount of depreciation is 23.75% of Rs10,000 = Rs.2,375 each year

Proof:

Year	Cost of balance b/d	Depreciation	Balance c/f Rs.
1	10,000	2,375	7,625
2	7,625	2,375	5,250
3	5,250	2,375	2,875
4	2,875	2,375	500

(Depreciation has been calculated to the nearest Rupee.)

Thus, by using this method an equal of depreciation is charged during each period, irrespective of its use. This method is simple and is usefully applied to all types of fixed assets, particularly in connection with patents, leasehold and similar assets have definite life. Its use in cost accounts affords a better comparative cost for its uniform charge. However, the total cost of depreciation and repair and maintenance cost of assets increase progressively.

(2) **Reducing Balance Method:** This is the method of providing for depreciation by means of periodic charges calculated as a constant proportion of the balance of the asset after deducing the amounts previously provided. This is also called written down value method.

Example:

Assuming the same data as before,

D = Proportion of reducing balance of cost of asset depreciated in each period.

$$= 1 - n\sqrt[n]{\frac{R}{C}} = 1 - 4\sqrt[4]{\frac{500}{10,000}}$$

$$= 1 - 0.4729$$

$$= 0.5271 \text{ or } 52.71\%$$

(if the residual value is nil, assume $R = 1$)

Proof:

<i>Year</i>	<i>Cost of balance b/d Rs.</i>	<i>Depreciation@ 52.71% Rs.</i>	<i>Balance c/f Rs.</i>
1	10,000	5,271	4,729
2	4,729	2,493	2,236
3	2,236	1,179	1,057
4	1,057	557	500

Because of its simplicity, this method is popular and is extensively used for taxation purpose. It is observed that a heavier depreciation is borne in the earlier years when repairs are lighter, and that the increasing repair cost is counterbalanced, in later years, by the reduced annual charge for depreciation. The use of this method for costing purposes is justifiable only if its effect is to provide a uniform charge for the services of the asset throughout its life; otherwise, the cost of production in subsequent years appears to decrease, although they are produced under identical conditions.

(3) Production Unit Method: This is method of providing for depreciation by means of a fixed rate per unit of production calculated by dividing the value of the asset by the estimated number of units to be produced during its life.

Example:

Assuming C and R to have to same value as before

and N_U = Estimated units to be produced during its life = 38,000 units

Then, D = Depreciation per unit

$$= \frac{C - R}{N_U} = \frac{10,000 - 500}{38,000} = \frac{9,500}{38,000}$$

= Re. 0.25 per unit

Thus, if 4,000 units are produced in a certain period, Rs.1,000 will be charged as depreciation.

This method gives emphasis on usage and ignores time factor. The depreciation charge is high in periods of abnormal activity and low when machines are idle. This method is suitable for wasting assets such as mines and quarries. If estimated production during the life can be determined, this method satisfies the costing requirement that the cost of an asset should be evenly spread over the work done by it. However, the main disadvantage of this method is that a separate record of output of each of the assets has to be maintained and this method cannot be applied where output are of different types.

(4) Production Hour Method: This is the method of providing for depreciation by means of a fixed rate per cent hour of production calculated by dividing the value of the asset by the estimated number of hours of its life.

Example:

Assuming C and R to have the same value, and

N_H = Estimated number of working hours of its life = 19,000 units

Then, D = Depreciation per unit

$$= \frac{C - R}{N_U} = \frac{10,000 - 500}{19,000}$$

= Re. 0.50 per unit

%n down value of the asset at the beginning of each period.

Example:

If C = Rs.10,000; n = 4 years; r = rate of interest 4% per cent annum;

a_H = present value of an annuity certain of 1 per year.

$$\frac{1 - \frac{1}{(1+r)^n}}{r}$$

Then, D = amount of periodic depreciation charge under this method

$$= \frac{C}{a_n} = \frac{C \times r}{1 - \frac{1}{(1+r)^n}} = \frac{10,000 \times 0.04}{1 - \frac{1}{(1.04)^4}} = \frac{400}{1 - \frac{1}{1.169859}} = \text{Re. 2,755}$$

Proof:

Year	Cost and balance b/f Rs.	Interest @ 4% (nearest rupees) Rs.	Total	Annual Provision Rs.	Balance c/f Rs.
1	10,000	400	10,400	2,755	7,645
2	7,645	306	7,951	2,755	5,196
3	5,196	208	5,404	2,755	2,649
4	2,649	106	2,755	2,755	Nil

The amount of depreciation is heavy in this method and is intended to cover the cost of opportunity lost by not investing the capital elsewhere.

This method is based on the concept that money invested in an asset earns interest. This method is suitably used for the redemption of leases over a fairly long period. It is a scientific method where investment funds outside a business is not required.

(6) Revaluation Method: This is the method of providing for depreciation by means of periodic charges each of which is equivalent to the difference between the values assigned to the asset at the beginning and the end of the period.

Example:

If, C = Cost of the asset = Rs.10,000.

V = Value of asset at the end of one year = Rs.7,000

Then, $D = \text{Amount of depreciation under this method} = C - V = 10,000 - 7,000 = \text{Rs.}3,000.$

This method is commonly used for depreciation of loose tools, livestock, patents, patterns, etc., which depreciate rapidly. This method is also used for use of assets in contracts.

(7) Sum of the Digits Method: This is the method of providing for depreciation by means of differing periodic rates which is computed by taking a reduced proportion of the sum of an arithmetical progression in respect of the years of life of the asset, multiplied by the cost, less residual value, of the asset.

Example:

If, $C = \text{Cost of asset} = \text{Rs.}10,000$; $R = \text{residual value} = \text{Rs.}400$; $n = 4 \text{ yrs.}$

Then, $S = \text{sum of years} = 1+2+3+4 = 10$

Then, depreciation charge:		Rs.
In year 1	4/10 of Rs.9,600	3,840
year 2	3/10 of Rs.9,600	2,880
year 3	2/10 of Rs.9,600	1,920
year 4	1/10 of Rs.9,600	960

This method is suitable for depreciation of motor vehicle and other assets which drop in value immediately after purchase. Thus the advantage of this method is that it takes into account of such drop in value of new asset and makes the decision to sell and repurchase before the estimated time an easier one.

The following should be noted for depreciation of the following types of fixed assets:-

- (a) *Goodwill*: No depreciation arises unless the firm's profits are decreasing. Prudent firms try to write off goodwill over a number of years.
- (b) *Freehold land*: In this case also no depreciation arises. Amounts written off should be shown separately.
- (c) *Looser tools, Jigs and Patterns*: Depreciation should be calculated on revaluation method.

(d) *Patents, Trade Marks, etc.*: There is a maximum legal life of such assets but the commercial life may be shorter. The asset should be depreciated by straight line method so that it is written off within the legal commercial life whichever is shorter.

(e) *Mines, Oil wells, Quarries, etc.*: Depreciation should be charge on depletion method.

Theory Questions:

1. What is Depreciation?
2. Define the term deprecation. What is the necessity for providing depreciation
3. Explain the various methods of providing for depreciation.

EXERCISES:

Problem 1:

A company whose accounting year is the calendar year, purchased on 1 April 2000 machinery costing Rs.30,000.

It purchased further Machinery on 1 October 2000 costing Rs.20,000 and on 1 July 2001 costing Rs.10, 000.

On 1st January 2004 one third of the machinery installed on 1st April, 2000 became obsolete and was sold for Rs.3, 000.

Show how machinery Account would appear in the books of the company, it being given that machinery was depreciated by Fixed Instalment method at 10 p.c. per annum.

Problem 2:

On 1 January 2000, a limited company purchased machinery for Rs.12, 000 and on 30 June 2001, it acquired additional machinery at a cost of Rs.2,000.

On 31st March, 2002 one of the original machines which had cost of Rs.500 was found to have become obsolete and was sold as scrap for Rs.50. it was replaced on that date by a new machine costing Rs.800.

Depreciation to be provided at the rate of 15 per annum on the written down value. Show machinery account for the first three years.

CHAPTER 4 FINANCIAL STATEMENT ANALYSIS

STRUCTURE

- 4.1 Introduction
- 4.2 Learning Objectives
- 4.3 Techniques
 - 4.3.1. Comparative Statement
 - 4.3.2 Common Size Statement
 - 4.3.3 Trend Analysis
 - 4.3.4 Other Analysis
- Summary
- Check your progress
- Answer to check your progress
- Glossary
- Model Questions

4.1 INTRODUCTION

Financial statements are usually the final output of a company's accounting operations. These statements contain information relating to the revenues, expenses, assets, liabilities and retained earnings of the business. Business owners often pay close attention to this information since the statements can provide detailed information about the company

4.2 LEARNING OBJECTIVE

After completing this chapter, you should be able to:

- ❖ Evaluate the relationship between component parts of financial statements
- ❖ Analyze the techniques of financial statements
- ❖ Interpret the financial position and financial strength of an organisation
- ❖ Make inter-firm comparison and comparison with standards or plans.
- ❖ Point out the importance and limitations

4.3 TECHNIQUES

Ratio Analysis

A traditional financial statement analysis tool is financial ratios. These ratios take information from the company's financial statements and calculate economic indicators for comparison to another company or the industry standard. Financial ratios include liquidity, asset turnover, financial leverage and profitability calculations. Liquidity ratios calculate the ability to meet short-term financial obligations. Asset turnover ratios indicate how well the company uses its assets to generate profits. Financial leverage ratios calculate the long-term solvency of a company. Profitability ratios help companies determine how much profit they are generating from the sale of various goods or services.

Horizontal Analysis

A horizontal financial statement analysis compares current financial statements to a previous year's financial information. Companies often conduct this analysis by putting several years of financial statements in a side-by-side comparison format. This enables business owners and managers to review the same month over several years to determine if revenues, expenses, assets or liabilities have increased, decreased or stayed the same. Companies can also use a horizontal analysis to compare changes in dollar amounts or a percentage change when comparing financial statements.

Vertical Analysis

A vertical financial statement analysis is conducted using common size financial statements. A common size financial statement shows each item on a financial statement in a percentage figure for each statement line item. A vertical analysis gives managers a different option for reviewing financial information; managers may be more comfortable looking at percentages rather than dollar amounts. The percentage figure represents how individual line-item amounts compare to the aggregate total of the financial statements.

Trend Percentage Analysis

A trend percentage analysis is an enhanced horizontal analysis technique. Trend percentage analyses help companies identify consistent revenues or expenses from past accounting periods. These trends can help managers make business decisions regarding future operations. Companies will use a specific financial statement as a base year for comparing all future financial statements. Changes for each future time period are expressed as a percentage when compared to the base financial statement. Companies can conduct a trend percentage analysis at various times of the year or use different financial statements as the base during this comparison process.

The following techniques are adopted in analysis of financial statements of a business organization:

- Comparative statement
- Common size statement
- Trend analysis
- Fund flow statement
- Cash flow statement
- Ratio analysis
- Value added analysis
- Break – even analysis

Comparative Statement

Comparative financial statements are statements of financial position of a business designed to provide time perspective to the consideration of various elements of financial position embodied in such statements. Comparative statements reveal the following

- a) Absolute data (money values or rupee amounts)
- b) Increase or reduction in absolute data (in terms of money values)
- c) Increase or reduction in absolute data (in terms of money values)
- c) Increase or reduction in absolute data (in terms of percentages)
- d) Comparison (in terms of ratios)
- e) Percentage of totals

Comparative Income Statement or Profit and Loss Account

A comparative income statement shows the absolute figures for two or more periods and the absolute change from one period to another. Since the figures are shown side by side, the user can quickly understand the operational performance of the firm in different periods and draw conclusions.

Comparative Balance Sheet: Balance sheets as on two or more different dates are used for comparing the assets, liabilities and the net worth of the company. Comparative balance sheet is useful for studying the trends of an understanding. Financial statements of two or more firms can also be compared for drawing inferences. This is called inter-firm comparison.

Advantages

Comparative statements indicate trends in sales, cost of production, profits etc., and help the analyst to evaluate the performance the company.

Comparative statements can also be used to compare the performance of the firm with the average performance of the industry or inter-firm comparison. This helps in identification of the weakness of the firm and remedial measures can be taken accordingly.

Weakness

Inter-firm comparison can be misleading if the firms are not identical in size and age and when they follow different accounting procedures with regard to depreciation, inventory valuation.

Inter-period comparison may also be misleading if the period has witnessed changes in accounting policies, inflation, recession etc

Problem No.1

The following are the balance Sheet of Gokul Ltd., for the years ending 31st December, 2000 and 2001.

	Fourth Year ended 31 st December 2000	Fifth Year ended December 2001
LIABILITIES		
Equity Capital	200000	3300
Preference Share capital	100000	1500
Reserves	20000	300
Profit and Loss a/c	15000	200
Bank overdraft	50000	500
Creditors	40000	500
Provision for taxation	20000	250
Propose dividend	15000	250
	460000	680
ASSETS		
Fixed assets (Less: Depreciation)	240000	3500
Stock	40000	500
Debtors	100000	1250
Bills receivables	20000	600
Prepaid expenses	10000	120
Cash in hand	40000	530
Cash at bank	10000	300
Total	460000	6800

Prepare the Comparative Balance Sheet and study its financial position.

Solutions:**Comparative Balance Sheet**

Particulars	31 st Dec.2000	31 st Dec.2001	Increase(+) Decrease (-))	Increase(+) Decrease(-)
Assets				
Current Assets				
Cash at bank and in hand	50000	83000	+33000	+66
Bills receivable	20000	60000	+40000	+200
Debtors	100000	125000	+25000	+25
Stock	40000	50000	+10000	+25
Prepaid expenses	10000	12000	+ 2000	+20
	-----	-----	-----	-----
Total Current Assets	220000	330000	+110000	+50
Fixed Assets	240000	350000	+100000	+45
	-----	-----	-----	-----
Total Assets	460000	680000	220000	+47.83
	-----	-----	-----	-----
Liabilities				
Current Liabilities				
Bank overdraft			+10000	+25
Creditors	50000	50000	+10000	+66.67
Propose dividend	40000	50000	+5000	+25
Provision for tax	15000	25000	-----	-----
	20000	25000	-	+20
	-----	-----	+ 25000	-----
Total current liabilities	125000	150000	-----	-----
	-----	-----	+130000	+65
Capital and Reserve				
Equity share capital			+50000	+50
Preference share capital	200000	330000	+10000	+50
Reserves	100000	150000	+5000	+33.33
Profit and Loss a/c	20000	30000	-----	-----
	15000	20000	+195000	58.21
	-----	-----	-----	-----
Total capital and reserves	335000	530000	+220000	+47.83
	-----	-----	-----	-----
Total Liabilities	460000	680000		

Interpretation:

1. the above comparative balance sheet reveals that the current assets have been increased to 50% while current liabilities have been increases to 20% only. Cash has increased to Rs.33000 (i.e 66%). There is an improvement in liquidity position.

2. The fixed assets purchased were for Rs.100000. As there are no long-term funds, it should have been purchased partly from share capital.
3. Reserves and profit and loss a/c increased by 50% and 33.33% respectively. The company may issue bonus shares in near future.
4. Current financial position of the company is satisfactory. It should issue more long-term funds.

Common Size Statement

The figure shown in financial statements viz profit and loss account and balance sheet are converted to percentages so as to establish each element to the total figure of the statement and these statements are called common size statements. These statements are useful in analysis of the performance of the company by analyzing each individual element to the total figure of the statement. These statements will also assist in analyzing the performance over years and also with the figures of the competitive firm in the industry for making analysis of relative efficiency. The following statements show the method of presentation of the data

The following are the balance sheet of NVs shanthi products ltd for the year ended 31st Dec.2000 and 31st Dec.2001.

Liabilities	2000	2001	Assets	2000	2001
Equity Capital	100000	165000	Fixed assets (net)	120000	175000
Pref., Capital	50000	75000	Stock	20000	25000
Reserves	10000	15000	Debtors	50000	62500
P & L a/c	7500	10000	Bills receivable	10000	30000
Bank overdraft	25000	25000	Prepaid expenses	5000	6000
Creditors	20000	25000	Cash at bank	20000	26500
Provision for			Cash in hand	5000	15000
Taxation	10000	12500			
Proposed dividends	7500	12500			
Total	230000	340000	Total	230000	340000

Prepare a common size balance sheet and interpret the same.

Solution

	2000		2001	
PARTICULARS	RS.	%	RS.	%
Capital and Reserves				
Equity capital	100000	43.48	165000	48.53
Pref. Capital	50000	21.74	75000	22.06
Reserves	10000	4.34	15000	4.41
Profit and Loss a/c	7500	3.26	10000	2.94
(i)	167500	72.82	265000	
Current liabilities				77.94
Bank overdraft				
Creditors	25000	10.87	25000	7.35
Provision for taxation	20000	8.70	25000	7.35
Proposed dividends	10000	4.35	12500	3.68
(ii)	7500	3.26	12500	3.68
Total liabilities (i) +	62500	27.18	75000	22.06
(ii)	230000	100.00	340000	100.00
Fixed assets (Net) (a)	120000	52.17	175000	51.47
Current Assets				
Stock	20000	8.70	25000	7.35
Debtors	50000	21.74	62500	18.38
Bills receivables	10000	4.34	30000	8.82
Prepaid expenses	5000	2.17	6000	1.77
Cash at bank	20000	8.70	26500	7.80
Cash in hand	5000	2.18	15000	4.41
(b)	110000	47.83	165000	48.53
Total assets (a) +	230000	100.00	340000	100.00
(b)				

Interpretation:

1. In 2001 current assets were increased from 47.83 % to 48.53%.
Cash balance were increased by Rs.16500.

2. Current liabilities were decreased from 27.18% to 22.06%. So the company can pay off the current liabilities from share capital issued.
3. Fixed assets were increased from 120000 in 2000 to Rs.175000 in 2001. These were purchased from the additional share capital issued
4. The overall financial position is satisfactory.

Trend Analysis

In trend analysis ratios of different items are re-calculated for various periods for comparison purpose. Trend analysis can be done by trend percentages, trend ratios and graphic and diagrammatic representation. The trend analysis is a simple technique and does not involve tedious calculations.

From the following data, calculate trend a percentage taking (1999 as base)

	1999	2000	2001
Sales	50000	75000	100000
Purchases	40000	60000	72000
Expenses	5000	8000	15000
Profit	5000	7000	13000

Solutions:

Particulars	1999 Rs.	2000 Rs.	2001 Rs.	Trend Percentage Base 1999		
				1999	2000	2001
Purchases	40000	60000	72000	100	150	180
Expenses	5000	8000	15000	100	160	300
Profit	5000	7000	13000	100	140	260
Sales	50000	75000	100000	100	150	200

Cash Flow Budget

Cash flow budget is a detailed budget of income realized in cash and cash expenditure incorporating both revenue and capital items. Cash flow budget focus on the cash inflow and cash outflow of various items represented in the income statement and balance sheet. The cash budget shows the cash flows arising from the operation budgets and the profit and asset structure. A projected cash flow statement is used in forecasting the financial requirements of the firm.

DUPONT ANALYSIS

DuPont analysis (also known as the dupont identity, DuPont equation, DuPont Model or the DuPont method) is an expression which breaks ROE (Return On Equity) into three parts.

The name comes from the DuPont Corporation that started using this formula in the 1920s.

Basic formula

$$\begin{aligned}\text{ROE} &= (\text{Profit margin}) * (\text{Asset turnover}) * (\text{Equity multiplier}) \\ &= (\text{Net profit/Sales}) * (\text{Sales/Assets}) * (\text{Assets/Equity}) \\ &= (\text{Net Profit/Equity})\end{aligned}$$

- Profitability (measured by profit margin)
- Operating efficiency (measured by asset turnover)
- Financial leverage (measured by equity multiplier)

ROE analysis

The Du Pont identity breaks down Return on Equity (that is, the returns that investors receive from the firm) into three distinct elements. This analysis enables the analyst to understand the source of superior (or inferior) return by comparison with companies in similar industries (or between industries).

The Du Pont identity is less useful for industries, such as investment banking, in which the underlying elements are not meaningful. Variations of the Du Pont identity have been developed for industries where the elements are weakly meaningful.

Du Pont analysis relies upon the accounting identity, that is, a statement (formula) that is by definition true.

Examples

High Turnover Industries

Certain types of retail operations, particularly stores, may have very low profit margins on sales, and relatively moderate leverage. In contrast, though, groceries may have very high turnover, selling a significant multiple of their assets per year. The ROE of such firms may be particularly dependent on performance of this metric, and hence asset turnover may be studied extremely carefully for signs of under-, or, over-performance. For example, same store sales of many retailers is considered important as an indication that the firm is deriving greater profits from existing stores (rather than showing improved performance by continually opening stores).

High margin industries

Other industries, such as fashion, may derive a substantial portion of their competitive advantage from selling at a higher margin, rather than higher sales. For high-end fashion brands, increasing sales without sacrificing margin may be critical. The Du Pont identity allows analysts to determine which of the elements is dominant in any change of ROE.

High leverage industries

Some sectors, such as the financial sector, rely on high leverage to generate acceptable ROE. Other industries would see high levels of leverage as unacceptably risky. Du Pont analysis enables third parties that rely primarily on the financial statements to compare leverage among similar companies.

ROA and ROE ratio

The return on assets (ROA) ratio developed by DuPont for its own use is now used by many firms to evaluate how effectively assets are used. It measures the combined effects of profit margins and asset turnover.^[1]

$$\text{ROA} = \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}} = \frac{\text{Net income}}{\text{Total assets}}$$

The return on equity (ROE) ratio is a measure of the rate of return to stockholders.^[2] Decomposing the ROE into various factors influencing company performance is often called the Du Pont system.^[3]

$$\text{ROE} = \frac{\text{Net income}}{\text{Equity}} = \frac{\text{Net income}}{\text{Pretax income}} \times \frac{\text{Pretax income}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

Where

- Net income = net income after taxes
- Equity = shareholders' equity
- EBIT = Earnings before interest and taxes

This decomposition presents various ratios used in fundamental analysis.

- The company's tax burden is (Net income ÷ Pretax profit). This is the proportion of the company's profits retained after paying income taxes. [NI/EBT]
- The company's interest burden is (Pretax income ÷ EBIT). This will be 1.00 for a firm with no debt or financial leverage. [EBT/EBIT]
- The company's operating income margin or return on sales (ROS) is (EBIT ÷ Sales). This is the operating income per dollar of sales. [EBIT/Sales]
- The company's asset turnover (ATO) is (Sales ÷ Assets).
- The company's leverage ratio is (Assets ÷ Equity), which is equal to the firm's debt to equity ratio + 1. This is a measure of financial leverage.
- The company's return on assets (ROA) is (Return on sales x Asset turnover).
- The company's compound leverage factor is (Interest burden x Leverage).

ROE can also be stated as:^[4]

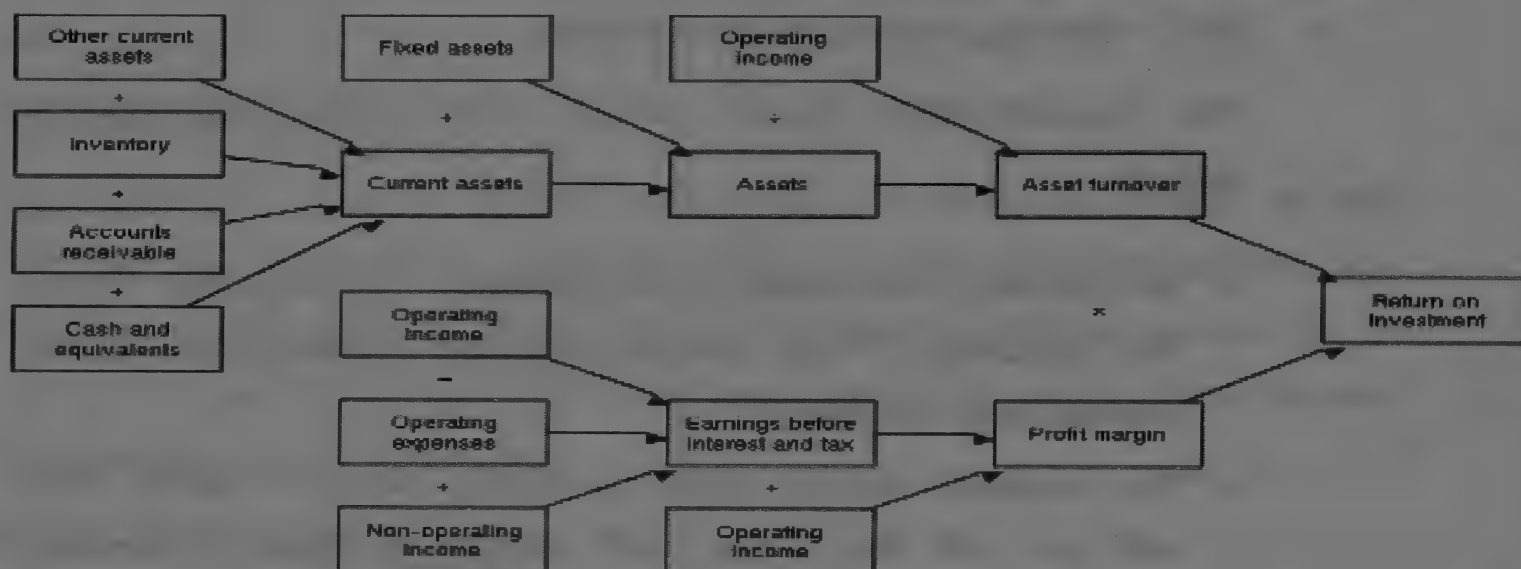
ROE = Tax burden x Interest burden x Margin x Turnover x Leverage

ROE = Tax burden x ROA x Compound leverage factor

Profit margin is (Net income ÷ Sales), so the ROE equation can be restated:

$$\text{ROE} = \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

DuPont Model



CHECK YOUR PROGRESS – II

1. List out the limitations of trend analysis.

2.----- Financial statements are those in which figures reported are converted into percentages to some common base.

- | | |
|------------------------------------|------------------------------|
| a) Comparative income statement | b) Comparative balance sheet |
| c) Common size financial statement | d) Trend analysis |

3. ----- are those statements which have been designed in a way so as to provide time perspective to the consideration of various elements of financial position.

- | | |
|-------------------------------------|-------------------------|
| a) Comparative financial statements | b) Funds flow statement |
| c) Common size financial statement | d) Trend analysis |

4. "Capital Employed " in the business means

- a) Fixed asset plus current asset
- c) Total asset capital

b) Fixed asset minus current

d) Fixed asset plus working

5. Net Working capital means

- a) Current asset minus current liabilities assets
- c) Total asset minus fixed assets

b) Fixed asset minus current

d) current liabilities only

SUMMARY

Financial statement is an organized collection of data according to logical and consistent accounting procedures. Its purpose is to convey an understanding of some financial aspects of a business firm. It may show a position at a moment of time as the case of a balance sheet or may reveal a series of activities over a given period as in the case of an income statement.

The analysis of the financial statement requires i) methodical classification of the data given in the financial statements. This facilitates showing the figures of a number of firms or number of years side by side for comparison purpose. ii) Comparison of various inter-connected figures with each other by different "Tools of financial analysis". These are Comparative Financial Statements, Common-size Financial Statements, Trend Percentages, Funds flow analysis, Ratio and Ratio analysis.

GLOSSARY

Income Statement

It explains what has happened to a business as a result of operations between two balance sheet dates.

Balance Sheet

It is a statement of financial position of a business at a specified moment of time.

Comparative Financial Statements

Those statement which has been designed in a way so as to provide time perspective to the consideration of various elements of financial position embodied in such statements.

Common-size Financial statements

Those statements which figures reported are converted into percentages to some common base.

Key to Check Your Progress - I

3. (c) 4.(b) 5.(b) 6. (b) 7. (d) 8. (a)

Key to Check Your Progress - II

2.(c) 3.(a) 4.(d) 5.(a).

MODEL QUESTIONS

1. Explain the meaning of the term "Financial Statements" and state their nature and limitations.
2. What are the different methods used for analysis of financial statements?
3. What are the various types of financial statements?
4. What are the different methods used for analysis of financial statements.
5. Discuss briefly the different techniques of analysis and interpretation of financial statements.

CHAPTER 5 RATIO ANALYSIS

STRUCTURE

- 5.1 Introduction
- 5.2 Learning Objective
- 5.3 Importance of Ratio Analysis
- 5.4 Limitations of Ratio Analysis
- 5.5 Classifications of Ratios
- 5.6 Profitability Ratio
- 5.7 Liquidity Ratio
- 5.8 Solvency Ratio
- 5.9 Coverage Ratio
- 5.10 Market Test Ratio or Earning Ratio or Proprietor Ratio
- 5.11 Dividend Yield Ratio

Check your Progress

Summary

Glossary

Key to Check your Progress

Model Questions

5.1 INTRODUCTION

As a student of Accountancy, you are well aware of the methods of recording business transactions in the books of accounts and the ultimate compilation there from a Profit and Loss Account and a Balance Sheet. It is now proposed to examine the art of interpretation of final accounts. The figures are visible to all but it requires skill and judgment to unveil their inner meaning and relative importance.

The purpose of this lesson is to examine the more important tool of financial analysis viz. Ratio Analysis. We shall see how business concerns measure their profitability and turnover as well as their liquidity and leverage with the help of these ratios.

A business concern's performance can be measured by the use of ratios. Ratios involving figures from the Profit and Loss Account, and the Balance Sheet, or both, may reveal much about a company's financial position to its management, shareholders and creditors.

The accounting data will be read by the following interested classes:

- | | |
|---------------------------|--------------------------|
| 1. Owners or Shareholders | 4. Financial Journalists |
| 2. Creditors | 5. Financial Analyst |
| 3. Investors | 6. Investigators or |

Researchers.

In the case of limited companies, most of the people who will read the accounting data have one thing in common, that is they are not intimately connected in any way with the day-to-day operation of the company. It is, therefore, essential [to assess position of the business concern] to know how to read the accounts properly and to extract the maximum information from them.

5.2 LEARNING OBJECTIVE

After completing this chapter, you should be able to:

- evaluate the relationship between component parts of financial statements
- interpret the financial position and financial strength of an organisation
- make inter-firm comparison and comparison with standards or plans.
- point out the importance and limitations of ratio analysis.

A ratio is a simple mathematical expression. Ratio may be expressed in a number of ways. It refers to the numerical or quantitative relationship between two variables. The relationship can be expressed as 1. percentage 2. fractions and 3. proportion of number.

5.3 IMPORTANCE OF RATIO ANALYSIS

The inter relationship that exists among the different items appeared in the financial statements, are revealed by accounting ratios. Ratio analysis of a firm's financial statements is of interest to a number of parties, mainly, shareholders, creditors, financial executives etc. Shareholders are interested with earning

capacity of the firm: creditors are interested in knowing the ability of firm to meet its financial obligations; and financial executives are concerned with evolving analytical tools that will measure and compare costs, efficiency, liquidity and profitability with a view to making intelligent decisions.

The importance of ratio analysis is discussed below, in brief:

- i) **Aid to measure General Efficiency:** Ratios enable the mass of accounting data to be summarised and simplified. They act as an index of the efficiency of the enterprise. As such they serve as an instrument of management control.
- ii) **Aid to measure Financial Solvency:** Ratios are useful tools in the hands of management and other concerned to evaluate the firms performance over a period of time by comparing the present ratio with the past ones. They point out firm's liquidity position to meet its short term obligations and long term solvency position.
- iii) **Aid in Forecasting and Planning:** Ratio analysis is an invaluable aid to management in the discharge of its basic function such as planning, forecasting, control etc. The ratios that are derived after analysing and scrutinising the past result, helps the management to prepare budgets to formulate policies and to prepare the future plan of action.
- iv) **Facilitate decision-making:** It throws light on the degree of efficiency of the management and utilisation of the assets and that is why it is called surveyor of efficiency. They help the management in decision-making.
- v) **Aid in corrective action:** Ratio analysis provides inter-firm comparison. They highlight the factors associated with successful and unsuccessful firms. If comparison shows an unfavourable variance, corrective actions can be initiated. Thus, it helps the management to take corrective action.
- vi) **Aid in Intra Firm Comparison:** Intra firm comparisons are facilitated. It is an instrument for diagnosis of financial health of an enterprise. It

facilitates the management to know whether the firm's financial position is improving or deteriorating by setting a trend with the help of ratios.

- vii) **Act as a Good Communication:** Ratios are an effective means of communication and play a vital role in informing the position and progress made by the business concern to the owners and other interested parties. The communications by the use of simplified and summarised ratios are more easy and understandable.
- viii) **Evaluation of Efficiency:** Ratio analysis is an effective instrument which, when properly used, is useful to assess important characteristics of business – liquidity, solvency and profitability. A study of these aspects may enable conclusions to be drawn relating to the capabilities of business.
- ix) **Effective Tool:** Ratio analysis helps in making effective control of the business – measuring performance and control of cost. Effective control is the keynote of better management. Ratio ensures secrecy.

Figures, in their absolute forms, shown in the financial statements are neither significant nor able to be compared. In fact, they are dumb. But ratios have power to speak.

5.4 LIMITATIONS OF RATIO ANALYSIS

Ratio analysis is, as already mentioned, a widely used tool of financial analysis. It is because ratios are simple and easy to understand. But they must be used very carefully. They suffer from various limitations. For instance, financial statements suffer from a number of limitations and may therefore, affect the quality of ratio analysis. If due care is not taken, they might confuse rather than clarify the situation. Different firms may use these terms in different senses or the same firm may use them to mean different things at different times.

Limitations

The limitations of the ratio analysis are given below:

- i) Comparisons are made difficult due to differences in definitions of various financial terms. Lack of standard formula for working out ratios makes it

difficult to compare them. They are worked out on the basis of different items in different industries.

- ii) **Limitations of Accounting Records:** Ratio analysis is based on financial statements which are themselves subject to limitations. Thus, ratios calculated on the figures given in the financial statements, also suffers from similar limitations.
- iii) **Lack of Proper Standards :** It is very difficult to ascertain the standard ratio in order to make proper comparison. Because, it differs from firm to firm, industry to industry. Apart from this, it may also have happened that in one firm, if the current ratio of 2 : 1 is found to be quite satisfactory, whereas in another firm 2.5 : 1 may be unsatisfactory. Again, a high current ratio may not necessarily mean sound liquid position when current assets include large inventory or inventory consisting of obsolete items.
- iv) **No Allowances for Price Level Changes:** Due to changes in price level of various years, comparison of ratios of such years cannot give correct conclusions. A change in the price level can seriously affect the validity of comparisons of ratios computed for different time periods. For instance, a firm which has purchased an asset at a lower price, will show a higher return, than the firm which has purchased the asset at a higher price.
- v) **Changes in Accounting Procedure:** Comparison between two variables prove worth provided their basis of valuation is identical. But in reality, it is not possible, such as methods of valuation of stock (FIFO or LIFO) or changing different methods of depreciation on fixed assets etc. Thus, if different firms for their valuation follow different methods, then comparison will practically be of no use.
- vi) **Qualitative Factors are Ignored:** Ratios are tools of quantitative analysis only and normally qualitative factors which may generally influence the conclusions derived, are ignored while computing ratios. For instance, a high current ratio may not necessarily mean sound liquid position when current assets include a large inventory consisting of mostly obsolete items. Therefore, it is very difficult to generalise whether a particular ratio is good or bad.

- vii) **Limited use of Single Ratio:** A single ratio would not be able to convey anything. Ratios can be useful only when they are computed in a sufficient large number. If too many ratios are calculated, they are likely to confuse instead of revealing meaningful conclusions.
- viii) **Background is Overlooked:** When inter-firm comparison is made, they differ substantially in age, size, nature of product etc. When an inter-firm comparison is made, these factors are not considered. Therefore, ratio analysis cannot give satisfactory results.
- ix) **Limited use:** Ratio analysis is only a beginning and gives just a fraction of information needed for decision-making. Ratio analysis is not a substitute for sound judgement. But ratios are tools to aid in applying judgement. Conclusions drawn from the ratio analysis are not sure indicators of bad or good management. They merely convey certain observations which need further investigations, otherwise wrong conclusions may be drawn. Computation of ratios is not useful unless they are interpreted.
- x) **Personal Bias:** Ratios have to be interpreted and different people may interpret the same ratio in different ways. Ratios are only means of financial analysis but not an end in themselves. Ratios are simple to understand and easy to calculate. Therefore, there is a tendency to over employ them. It should be clearly noted that ratios are only tools and the personal judgement of analyst is more important. The analyst has to carry further investigations and exercise his judgement in arriving at a correct diagnosis.
- xi) **Arithmetical Window Dressing:** Window-dressing means manipulation of accounts in a way so as to conceal vital facts and present the statements in a way to show better position than what it actually is. By doing so, it is possible to cover up bad financial position. Therefore, ratios based on such figures are not reliable.
- xii) **Changing Policies:** Ratios are computed on the basis of past result. Past is not an indicator of future. Ratios computed from historical data are used for predicting and projecting the likely events in the future. Such ratios may provide a glimpse of firm's past performance. But forecast for the

future may not be correct as several other factors like management policies, market conditions etc. may induce future operations.

Ratios are only a post-mortem of what has happened between two Balance Sheet dates. The position in the interim period is not revealed by ratio analysis. Besides, they give no clue to future. Ratio analysis suffers from serious limitations. The analyst should not be carried away by its oversimplified nature, easy computation with a high degree of precision. They are as good as data itself. The analyst must have comprehensive but practical knowledge and experience about the concerns whose statements have been used for calculating these ratios. Ratios are not an end in themselves but they are means to achieve a particular end. Another limitation is that of standard ratio with which the actual ratios may be compared. Generally, there is no such ratio which may be treated as standard for the purpose of comparison, because conditions of one concern differ significantly from those of another concern. The analyst must be able to examine the nature of the data carefully. If accounting data lack of uniformity particularly definitional uniformity, then ratios calculated on the basis of them will be misleading. Ratio analysis is one of the many techniques of analysis and interpretation. Thus, while attempting to draw any conclusion on this basis, other techniques should also be used.

CHECK YOUR PROGRESS – I

1. Explain the various objectives of ratio analysis.

2. List out the limitations of ratios

5.5 CLASSIFICATIONS OF RATIOS

Ratios can be classified in several ways. One classification is based on the statement from which the ratios are calculated. Thus ratios calculated from the Balance Sheet are called Balance Sheet ratios and those based on Trading and Profit and Loss Account are termed Profit and Loss Account Ratios. Ratios that draw information from both the Balance Sheet and Income Statement are known as composite ratios.

Based on the purpose they serve, ratios may be classified into Liquidity ratios, Leverage ratios, Activity ratios and profitability ratios. Most commonly used ratios under each group are listed below with their formulas for calculation. However, if adequate information is not available the formulae may be suitably modified in the light of the information available.

5.6 LIQUIDITY RATIOS

These ratios measure the ability of a firm to pay its current liabilities in time. Failure to meet current obligations may damage the credit standing of the firm and lead sooner or later to the insolvency of the firm. Hence short-term solvency is to be given utmost importance. Two liquidity ratios are commonly used.

Current Ratio: Also known as working capital ratio, this is a general measure of short-term solvency position of a business.

$$\text{Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Text books say that of the current ratio is 2 the position can be taken as satisfactory. However it is to be borne in mind that no universal standard can be prescribed for any ratio, industry average or ratios of similar firms in the same industry may serve as better standards for comparison.

Quick Ratio / Acid-test Ratio: This is a more rigorous test of short-term solvency. Ignoring the least liquid of all current assets namely, inventory and prepaid expenses, the remaining current assets, termed quick assets are compared with current liabilities in this ratio.

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

Current Liabilities

In general, a quick ratio of 1 is considered ideal. A lesser quick ratio underlines the need for immediate measures to improve the short-term solvency position.

5.7 LEVERAGE RATIOS / CAPITAL STRUCTURE RATIOS

These ratios measure the extent of debt financing in the business. Debt is a twin edged weapon base of debt may help to increase the return on owners funds, but at the same time too much of debt may lead to payment of interest out of capital and lead to ultimate insolvency of the firm. Hence the firm has to choose the appropriate debt equity mix.

Debt-Equity Ratio

Here debt means exclusive of current liabilities. Share holders' equity including i) equity and preference share capital ii) past accumulated profits but excludes fictitious assets iii) discount on issue on shares and so on.

Another approach to the calculation of the debt-equity ratio is to relate the total debt (not merely long-term debt) to the shareholders equity.

$$\text{Debt-equity Ratio} = \frac{\text{Total debt}}{\text{Shareholders' equity}}$$

Shareholders' equity

Debt-equity ratio is the ratio of total outside liabilities to owners' total funds.

Debt to Total Capital Ratio

The relationship between creditors' funds and owners capital can also expressed in terms of another leverage ratio. This is the debt to total capital ratio. Here, the outside liabilities are related to the total capitalisation of the firm and not merely to the shareholder's equity.

It can be calculated in different ways: One approach is to relate the long term debt to the permanent capital of the firm.

$$\text{Debt to total capital ratio} = \frac{\text{Long-term debt}}{\text{Long-term debt} + \text{Permanent capital}}$$

Permanent Capital

Another approach to calculating the debt to capital ratio is to relate the total debt to total assets of the firm. The total debt of the firm comprises long-term debt plus current liability. The total assets consist of permanent capital plus current liabilities.

$$\text{Debt to total assets/ capital ratio} = \frac{\text{Total debt}}{\text{Total assets}}$$

Proprietary Ratio

The relationship between proprietor's funds and total assets is called the proprietary ratio. This ratio indicates the proportion of total asset financed by owners.

$$\text{Proprietary Ratio} = \frac{\text{Proprietors funds}}{\text{Total assets}} \times 100$$

Capital Gearing ratio

It is the relationship between equity (owners equity) funds and fixed income bearing funds (preference share, debenture and other borrowed funds). This ratio is useful to show the effect of the use of fixed interest of funds on the earnings available to the equity shareholders.

$$\text{Capital Gearing Ratio} = \frac{\text{Fixed interest bearing funds}}{\text{Equity share holders fund}} \times 100$$

Coverage Ratio

The another category of leverage ratios are coverage ratios. These ratios are computed from the information available in the profit and loss account. The coverage ratios measure the relationship between what is normally available from operations of the firms and the claims of the outsiders. The important coverage ratios are i) Interest coverage, ii) Dividend coverage, iii) total coverage, iv) total cash flow coverage and v) debt service coverage ratio.

Interest Coverage Ratio

It is also known as time-interest-earned ratio. This ratio measures the debt servicing capacity of a firm insofar as fixed interest on long term loan is concerned. It is determined by dividing by operating profits or earnings before interest and taxes (EBIT) by the fixed interest charges on loans.

$$\text{Interest Coverage} = \frac{\text{EBIT}}{\text{Interest}}$$

Too high a ratio may imply unused debt capacity. In contrast, a low ratio is a danger signal that the firm is using excessive debt and does not have the ability to offer assured payment of interest to the lenders.

Dividend Coverage Ratio

It measures the ability of a firm to pay dividend on preference shares which carry a fixed rate of dividend. This ratio is the ratio of net profits after taxes (EAT) and the amount of preference dividend.

$$\text{Dividend Coverage} = \frac{\text{EAT}}{\text{Preference dividend}}$$

The preference dividend is fixed obligation, the earnings taken into account are after taxes. This is because unlike debt on which interest is a charge on the profit of the firm, the preference dividend is treated as an appropriation of profit. The higher the coverage, the better it is from their point of view.

Total Fixed Charge Coverage Ratio

While the interest coverage and preference dividend coverage ratios consider the fixed obligations of the firm to the respective suppliers of funds, that is creditors and preference share holders, the total coverage ratio has a wider scope and takes into account all the committed fixed obligations of the firm, that is i) interest on loan ii) preference dividend iii) lease payments and iv) repayment of principal.

$$\text{Total fixed charge coverage} = \frac{\text{EBIT} + \text{Lease Payments}}{\text{Interest} + \text{Lease payments} + (\text{preference dividend} + \text{installment of principal}) (1-t)}$$

Total Cash flow Coverage Ratio

The above mentioned coverage ratio suffer one major limitation, that is they relate the firm's ability to meet its various financial obligations to its earnings. In fact, these payments are met out of cash available with the firm. So it would be more appropriate to relate cash resources of a firm to its various financial obligations. So it can be called as total cash flow coverage ratio.

$$\text{Total cash flow coverage ratio} = \frac{\text{EBIT} + \text{Lease Payments} + \text{Depreciation} + \text{Non-cash expenses}}{\text{Lease payments} + \text{Interest} + \text{principal repayment} / (1-t) + \text{Preference dividend} / (1-t)}$$

The overall ability of a firm to service outside liabilities is truly reflected in the total cash flow coverage ratio, the higher the coverage, the better the ability.

Debt-service coverage ratio

Debt service capacity is the ability of a firm to make contractual payments required on a scheduled basis over the life of the debt.

$$\text{Debt-service coverage ratio} = \frac{\text{EAT} + \text{Interest} + \text{Depreciation} + \text{Other Non-cash expenses like amortization}}{\text{Installment}}$$

Higher the ratio, the better it is. A ratio of less than one may be taken as a sign of long term solvency problem as it indicates that the firm does not generate enough cash internally to service debt.

Activity Ratios

Activity ratios are concerned with measuring the efficiency in asset management. These ratios are otherwise called as efficiency ratios or utilisation ratios. Activity ratio may be defined as a test of the relationship between sales and various assets of a firm. The various types of activity ratios are as follows.

Inventory Turnover Ratio

This ratio indicates the number of times inventory is replaced during the year. It measures the relationship between the cost of goods sold and the inventory level. The ratio can be calculated in two ways.

First it is computed by using the following formula

$$\text{Inventory Turnover ratio (or) Stock Turnover ratio} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

The average inventory can be computed on the basis of average of the opening inventory and the closing inventory. There are lot of difficulties in getting detailed information regarding inventory level. But data may also not readily available in respect of cost of goods sold. To solve these problem arising out of non-availability of the required data the second approach is to be used to compute inventory turnover ratio.

$$\text{Inventory Turnover ratio} = \frac{\text{Sales}}{\text{Closing inventory}}$$

In the above mentioned two approaches to calculating the inventory turnover ratio, the first one relates the cost of goods sold to the average inventory is theoretically superior as it is logically consistent. The merit of the second one is that it is free from practical problems of computation.

Accounts Receivable Turnover Ration or Debtors Turnover ration Debt Collection Period

This ratio shows how quickly receivables or debtors are converted into cash. In other words the debtors turnover ratio is a test liquidity of the debtors of a firm.

The liquidity of a firms receivables can be examined in two ways i) Debtors turnover ii) average collection period. The debtors turnover ratio shows the relationship between credit sales and debtors of a firm. It can be computed in two ways.

$$\text{Debtors ratio} = \frac{\text{Credit Sales}}{\text{Average Debtors} + \text{Average Bills Receivable}}$$

For applying this formula arranging the required data are very difficult. To avoid difficulty arising out of the non-availability of data, the other approach is used to calculate Debtors turnover ratio.

$$\text{Total Sales}$$

$$\text{Debtors Turnover ratio} = \frac{\text{Sales}}{\text{Debtors + Bills Receivable}}$$

The first approach is superior than the second approach since the question of the speed of conversion of sales into cash arises only in credit sales and not on total sales.

Average Collection Period

This ratio is interrelated and depend upon the receivable turnover ratios. It is calculated dividing the days in a year by debtors turnover.

$$\text{Average Collection Period} = \frac{\text{Number of days or months in a year}}{\text{Debtors Turnover}}$$

Assets Turnover ratio

This ratio is also know as the investment turnover ratio. Assets turnover ratio indicates the efficiency with which firm uses all its assets to generate sales, there are many variants of this ratio.

$$\text{i) Total assets turnover} = \frac{\text{Cost of goods sold}}{\text{Average total assets}}$$

$$\text{ii) Fixed assets turnover} = \frac{\text{Cost of goods sold}}{\text{Average fixed assets}}$$

$$\text{iii) Capital turnover} = \frac{\text{Cost of goods sold}}{\text{Average capital employed}}$$

$$\text{iv) Current assets turnover} = \frac{\text{Cost of goods sold}}{\text{Average current assets}}$$

$$\text{v) Working capital turnover} = \frac{\text{Cost of goods sold}}{\text{Net working capital}}$$

Here the assets and fixed assets are net of depreciation and the assets are exclusive of fictitious assets like deferred revenue expenditure and the debit balance of profit and loss account.

PROFITABILITY RATIOS

This ratio will be helped to measure the financial soundness of a firm. Both the management and the investors of the firm are eager to measure its operating efficiency. The operating efficiency of a firm and its ability to ensure adequate returns to its shareholders depends ultimately on the profits earned by it. The profitability of a firm can be measured by its profitability of a firm can be measured by its profitability ratios. In other words the profitability ratios are designed to provide answers to the following questions.

- i) Whether the profit earned is adequate
- ii) What is the rate of return
- iii) What are the EPS
- iv) What was the amount paid in dividends
- v) What was the rate of return to equity shareholders and the like.

Profitability ratio can be determined on the basis of either sales or investments profitability ratios in relation to sales are as follows:

- i) Profit margin and
- ii) Expenses ratio

Profitability in relation to investments is measured by i) return on assets ii) return on capital employed and iii) return on shareholders equity.

Profitability Ratios Related to Sales

These ratios are based on that a firm should earn sufficient profit on each rupee of sales. If adequate profits are not earned on sales, there will be difficult in meeting the operating expenses and no returns will be available to the owners. These ratios consist of i) profit margin ii) expenses ration.

Profit Margin Ratio

The profit margin ratio measures the relationship between profit and sales. Profit may be gross and net, there are two type of profit margins. i.e., Gross profit margin and net profit margin.

Gross Profit Margin

It is calculated by dividing gross profit by sales.

$$\text{Gross profit margin} = \frac{\text{Gross profit}}{\text{Sales}} \times 100$$

Gross profit is the result of the relationship between prices, sales volume and costs. A change in gross profit margin can be brought about by changes in any of these factors.

Net Profit Margin

Net profit margin measures the percentage of each sales rupees remaining after all costs and expenses including interest and taxes have been deducted.

This ratio can be calculated in three ways

$$\text{i) Operating profit ratio} = \frac{\text{Earnings Before Interest and Tax (EBIT)}}{\text{Net Sales}}$$

$$\text{ii) Pre-tax profit ratio} = \frac{\text{Earnings Before Tax (EBT)}}{\text{Net Sales}}$$

$$\text{iii) Net profit ratio} = \frac{\text{Net profit after Interest and Tax}}{\text{Net Sales}}$$

The net profit margin is an indicator of a management's ability to operate the business with success. A high net profit margin would ensure adequate return to the owners as well as enable a firm to withstand adverse economic conditions when selling price is declining cost of production is increasing and demand for the product is falling.

Expenses Ratio

Another profitability ratio related to sales is the expenses ratio. It is computed by dividing expenses by sales. The term expenses includes the following:

i) cost of goods sold, ii) administrative expenses, iii) selling and distribution expenses, iv) financial expenses but excluding taxes, dividends and extra ordinary losses, due to theft or fire.

The different kinds of expenses ratios are as follows:

- $$\text{i) Cost of goods sold ratio} = \frac{\text{Cost of goods sold}}{\text{Net Sales}} \times 100$$
- $$\text{ii) Operating expenses ratio} = \frac{\text{Administrative expenses} + \text{selling expenses}}{\text{Net Sales}} \times 100$$
- $$\text{iii) Administrative expenses ratio} = \frac{\text{Administrative expenses}}{\text{Net Sales}} \times 100$$
- $$\text{iv) Selling expenses ratio} = \frac{\text{Selling expenses}}{\text{Net Sales}} \times 100$$
- $$\text{v) Operating ratio} = \frac{\text{Cost of goods sold} + \text{operating expenses}}{\text{Net Sales}} \times 100$$
- $$\text{vi) Financial expenses ratio} = \frac{\text{Financial expenses}}{\text{Sales}} \times 100$$

The expenses ratio is closely related to the profit margin. This ratio is very important one for analysing profitability of a firm. It should be compared over a period of time with the industrial coverage as well as firms of similar type. The profitability ratios based on sales are an indicator of the operational efficiency of a manufacturing enterprises.

Profitability Ratios Related to Investments:

Return on Investment (ROI)

This ratio measured the overall effectiveness of management in generating profits with its available assets. There are three different concepts of investment in financial points of view. That is assets capital employed and shareholders equity. Based on this classification rojs can be broadly classified in to three categories. That is (i) return on assets (ii) return on capital employed and (iii) return on shareholders equity.

Return on Assets (ROA)

Here the profitability radio is measured interns of the relationship between net profits and assets. The RAO may also be called as profit to assets ratio. There

are number of approaches available to define the term net profits and assets. It varies according to the purpose and the need. The concept of net profit may be (i) net profit after tax (ii) net profit after tax and interest (iii) net profit after tax + interest – tax savings.

Assets may be defined as (i) total assets (ii) fixed assets (iii) tangible assets (iv) net assets and the like accordingly, the different variants of the RAO are.

$$\text{Return on Assets (ROA)} = \frac{\text{Net profit after taxes}}{\text{Average total assets}} \times 100$$

$$\text{ii) ROA} = \frac{\text{Net profit after tax + interest}}{\text{Average total assets}} \times 100$$

$$\text{ROA} = \frac{\text{Net profit after tax + interest}}{\text{Average tangible assets}} \times 100$$

$$\text{iv)ROA} = \frac{\text{Net profit after tax + interest}}{\text{Average fixed assets}} \times 100$$

The above measures may not provide correct results for inter – firm comparisons particularly when these firms, have marked by varying capital structure as interest payment on debt qualified for tax deduction in determining net taxable income hence effective cash flow is less than the actual payment of interest by the amount of tax shield on interest payment. As a result, the following formula may be used to find out ROA.

$$\text{ROA} = \frac{\text{EAT} + (\text{Interest} - \text{tax savings on interest})}{\text{Average total assets} \setminus \text{tangible assets} \setminus \text{fixed assets}} \times 100$$

Return in Capital Employed (ROCE)

It is also similar to be ROA except in one respect. Here the profits are related to the total capital employed. The term capital employed means all long term funds supplied by the lenders and owners of the firm. It can be computed in the following ways: i) owners equity + non – current liabilities, ii) Net Working Capital + Fixed Assets

The ROCE can be computed in the following ways by using different approaches.

EBIT

$$\text{i) ROCE} = \frac{\text{EBIT}}{\text{Average total capital employed}} \times 100$$

Net profit after taxes + interest – tax advantage on interest

$$\text{ii) ROCE} = \frac{\text{Net profit after taxes + interest – tax advantage on interest}}{\text{Average total capital employed}} \times 100$$

Net profit after taxes + interest – tax advantages

$$\text{iii ROCE} = \frac{\text{Net profit after taxes + interest – tax advantages}}{\text{Average total capital employed – average tangible assets}}$$

Return on Shareholders Equity

This ratio explains the relationship of return to the source of funds. ROCE expresses the profitability of a firm in relation to the funds applied by the lenders as well as owners taken together. The return on shareholders equity measures exclusively the return on the owners fund. The shareholders of the firm may be classified in to two groups that is equity shareholders and preference shareholders. The preference shareholders enjoy a preference over equity shares in respect of dividends. There are several measures to calculate return on shareholders equity.

i) rate of return on total shareholders equity ii) rate of return on equity of ordinary shareholders iii) earning per share iv) dividend per share v) dividend pay out ratio vi) dividend and earnings yield ratio vii) price earning ratio.

A Return on Total Shareholders Equity

According to this ratio, profitability is measured by dividing net profit after tax but before preference dividend by the average total shareholders equity. The term shareholder equity means. i) preference share capital ii) ordinary share capital iii) share premium iv) reserves and surplus less accumulated losses if any, the shareholders equity is otherwise called as net worth.

$$\text{Return on Total Shareholders Equity} = \frac{\text{Net profit after taxes}}{\text{Average total shareholders equity}} \times 100$$

This ratio explains how profitability the owners funds have been utilised by the firm a comparison of this ratio with similar firms reveals the strength and weakness of the firm.

Return on Ordinary Shareholders Equity (net worth)

The real owners of the company are ordinary shareholders. Where as preference shareholders were also the owners but equity shareholders bears all the risk. The profitability of a firm from the owners point of view should therefore in the fitness of things be assessed in terms of return to the ordinary shareholders.

$$\text{Return on Equity Funds} = \frac{\text{Net profit after taxes} - \text{preference}}{\text{Average ordinary shareholders equity or net worth}} \times 100$$

The ratio indicates that whether the firm has earned a satisfactory return for its equity shareholders or not.

Earning Per Share

It means the profits available to the equity shareholders on a per share basis that is the amount that can be get on every share held. It is calculated by dividing the profits available to the equity shareholders by the number of outstanding shares.

$$\text{EPS} = \frac{\text{Net profit available to the equity shareholders}}{\text{Number of ordinary shares outstanding}}$$

This ratio is used widely EPS is a measure of profitability of a firm from the owners point of view.

Cash Earnings Per Share

It is computed by using cash flows from business operations as the numerator. This value is determined by adding non – cash expenses such as depreciation amortisation to net profits available to equity shareholders.

$$\text{Net profit available to equity Shareholders} + \text{depreciation} + \text{amortisation} + \text{non cash expenses}$$

$$\text{Cash EPS} = \frac{\text{Number of equity shares outstanding}}{\text{Cash EPS}}$$

This ratio indicates the cash generating ability per equity share of the firm

Book Value Per Share (EPS)

It represents the equity claim of the equity shareholders on a per share basis which is computed dividing net worth by number of equity shares outstanding.

$$\text{Book value per share} = \frac{\text{Net worth}}{\text{Number of equity shares outstanding}}$$

Price – to – Book Value Ratio

It measures the relationship between market price of an equity shares (MPS) with book value per share (BPS) ratio.

$$\text{P/B Ratio} = \frac{\text{MPS}}{\text{BPS}}$$

Dividend Per Share (DPS)

This ratio explains the dividends paid to equity shareholders on a per share basis. In other words it is a net distributed profit belonging to the ordinary shareholders divided by number of ordinary shares outstanding.

$$\text{DPS} = \frac{\text{Dividend paid to ordinary shareholders}}{\text{Number of ordinary shares outstanding}}$$

This ratio would be a better indicator than EPS as the former source what exactly is received by the owners. Both EPS & DPS should not be taken at its face value an increased DPS may not be a reliable measure of profitability as the equity base may have increased due to increased retention without only change in the number of outstanding shares.

3.8.3.4.8 D\P Ratio

It is also known as pay-out ratio it measures the relationship between the earnings belonging to the ordinary share holders and the dividend paid to them. It can be calculated by dividing by the total dividend paid to the owners by the total profits available to them.

$$\text{D/P Ratio} = \frac{\text{Total dividend to equity share holders}}{\text{Total net profit belonging to equity share holders}}$$

$$\text{OR) D/P ratio} = \frac{\text{DPS}}{\text{EPS}} \times 100$$

The dividend pay out ratio is widely used ratio. The pay out ratio can be compared with the trend over the years, or an into firm and inter firm comparison would throw light on its adequacy.

Earnings & Dividend Yield Ratio

This ratio is closely related to EPS & DPS, while EPS & DPS are leased on the book value per share, the yield is expressed in terms of market value per share. The earnings yield may be defined as the ratio of EPS to market value per equity share similarly, the dividend yield is calculated by dividing the cash dividends per share by the market value per share.

$$\text{i) Earnings yield} = \frac{\text{Earnings per share}}{\text{Market price per share}} \times 100$$

$$\text{ii) Dividend yield} = \frac{\text{Dividend per share}}{\text{Market value per shares}} \times 100$$

Price Earning Ratio (P/E Ratio)

P/E ratio is closely related to earning yield \ earnings price ratio. It is actually the reciprocal of the later. This ratio is calculated by dividing the market price of the share by the EPS.

$$\text{P/E Ratio} = \frac{\text{MPS}}{\text{EPS}} \text{ times}$$

This ratio reflects the price currently beings paid by the market for each rupee of currently reported EPS.

CHECK YOUR PROGRESS – II

1. State the classifications of ratios

2. List out the uses of ratios

3. Which of the following is the test of long-term liquidity of a business?

a) Interest Coverage Ratio

b) Current Ratio

c) Stock Turnover Ratio

d) Operating Ratio

4. Gross Profit Ratio is the Ratio of

a) Gross Profit to Net Total Sales

b) Gross Profit to Net Credit Sales

c) Gross Profit to Net Cash Sales

d) Gross Profit to Capital Employed

5. Gross Capital Employed is equal to

a) Fixed Assets

b) Current Assets

c) Fixed Assets Plus Current Assets

d) None of these

6. Dividing Net Sales by Average Debtors would yield

a) Acid Test Ratio

b) Return on Sales Ratio

c) Debtors Turnover Ratio

d) None of these

7. Which of the following transactions has no effect on the Current Ratio?

a) Machinery Purchase for Cash

b) Motor Car Sold for Cash

- c) Preference Shares Redeemed d) Bills Receivable Collect
8. Which of the following transactions change the Current Ratio?
- a) Purchase of goods for cash b) Plant acquired on account
- c) Sold goods on credit d) Debentures converted into equity capital
9. The immediate solvency ratio is
- a) Quick ratio b) Current ratio
- c) Stock turnover ratio d) Debtors turnover ratio
10. Pay out Ratio means
- a) Ratio of debtors and creditors
- b) Ratio of earnings that are distributed through dividends
- c) Ratio of profit distributed to profit retained
- d) None of the above
11. ROI takes into account
- a) Shareholders; investment b) Interest on working capital
- c) Interest on fixed assets d) None of these
12. "Higher the ratio the most favourable it is"
- a) Operating ratio b) Operating profit ratio
- c) Stock turnover ratio d) ROI
13. The most rigorous test of liquidity is
- a) Current ratio b) Acid test ratio
- c) Absolute ratio d) Stock turnover ratio
14. ROI is computed as
- a) Net profit/sales b) Cost of sales/capital employed
- c) Net profit ratio x capital turnover ratio d) Operating net profit /shareholders fund

Exercise and Discussions

Problem No.1:

The following is the trading and profit and loss account of Ram Sons (Pvt.) Ltd., for the year ended June 30, 2004.

	Rs.		Rs.
To Stock-in-hand	76,250	By Sales	5,00,000
To Purchases	3,15,250	By Stock in hand	98,500
To Carriage and freight	2,000		
To Wages	5,000		
To Gross profit	2,00,000		
	<u>5,98,500</u>		<u>5,98,500</u>
To Administrative expenses	1,01,000	By Gross profit	2,00,000
To Finance expenses:		By Non-operating incomes:	
Interest		Interest on security	
1,200		1,500	
Discount		Dividend on shares	
2,400		3,750	
Bad Debts	7,000	Profit on sale of shares	6,000
3,400		750	
To Selling and distribution expenses	12,000		
To Non-operating expenses:			
Loss on sale of securities			
350			
Provision for legal suit	2,000		
1,650			
To Net profit	<u>84,000</u>		
	<u>2,06,000</u>		<u>2,06,000</u>

You are required to calculate: (a) Expense ratio, (b) Gross profit ratio, (c) Net profit ratio, (d) Operating net profit ratio, (e) Operating ratio, and (f) Stock turnover.

Solution:

(a) Expense ratios

$$\begin{aligned}
 \text{(i)} \quad & \frac{\text{Administration expenses}}{\text{Sales}} = \frac{\text{Rs.1,01,000}}{\text{Rs.5,00,000}} \times 100 = 20.2 \% \\
 \text{(ii)} \quad & \frac{\text{Finance expenses}}{\text{Sales}} = \frac{\text{Rs.7,000}}{\text{Rs.5,00,000}} \times 100 = 1.40 \%
 \end{aligned}$$

$$(iii) \quad \frac{\text{Selling and distribution expenses}}{2.40 \%} = \frac{\text{Rs.12,000}}{\text{Sales}} \times 100 = \frac{\text{Rs.12,000}}{\text{Rs.5,00,000}} \times 100 =$$

$$(iv) \quad \frac{\text{Non-operating expenses}}{\text{Sales}} = \frac{\text{Rs.2,000}}{\text{Rs.5,00,000}} \times 100 = 40 \%$$

(b) Gross profit ratio

$$\frac{\text{Gross profit}}{\text{Sales}} = \frac{\text{Rs.2,00,000}}{\text{Rs.5,00,000}} \times 100 = 40 \%$$

(c) Net profit ratio

$$\frac{\text{Net profit}}{\text{Sales}} = \frac{\text{Rs.84,000}}{\text{Rs.5,00,000}} \times 100 = 16.80 \%$$

(d) Operating profit ratio

$$\begin{aligned} \text{Operating profit} &= \text{Net Profit} + \text{Non-operating expenses} - \text{Non-operating incomes} \\ &= \text{Rs.84,000} + \text{Rs.2,000} - \text{Rs.6,000} = \text{Rs.80,000} \\ \therefore \text{Ratio} &= \frac{\text{Operating net profit}}{\text{Sales}} \times 100 = \frac{\text{Rs.80,000}}{\text{Rs.5,00,000}} \times 100 = 16 \% \end{aligned}$$

(e) Operating ratio

This is an expression of the cost of goods sold plus all other operating expenses to net sales. This is calculated as follows:

Stock in the beginning	Rs. 76,250
Add: Purchases	3,15,250
Add: Direct expenses (Rs.2,000 + Rs.5,000)	7,000
	<hr/> 3,98,500
Less Stock in hand at the end	98,500
Cost of goods sold	<hr/> 3,00,000
Add: All operating expenses:	
Administration expenses	
1,01,000	
Finance expenses	
7,000	
Selling and distribution expenses	
12,000	1,20,000

Total cost of operation

4,20,000

$$\text{The operating ratio} = \frac{\text{Rs.4,20,000}}{\text{Rs.5,00,000}} \times 100 = 84\%^*$$

(f) Stock turnover

Stock at the beginning

76,250

Add: Stock at the end

98,500

1,74,750

87,375

∴ Average stock (Rs.1,74,750 / 2)

Cost of goods sold

Rs.3,00,000

$$\text{Stock turnover} = \frac{\text{Cost of goods sold}}{\text{Average stock}} = \frac{\text{Rs.3,00,000}}{\text{Rs.87,375}} = 3.43$$

times

Average stock

Rs.87,375

Problem No.2:

M/s Raj and Sons Ltd present you the following:

BALANCE SHEET

As on 31st December, 2003

	RS.		RS.
Equity share capital	50,000	Fixed assets	87,500
8% Preference share capital	10,000	Investments	25,000
Reserve Fund	40,000	Stock	30,000
6% Debentures	20,000	Sundry debtors	13,500
Sundry Creditors	30,000	Preliminary expenses	8,000
Profit and loss account			
2002	1,000		

2003	20,000	21,000	
		1,71,000	1,71,000

The directors intend to transfer a sum of Rs.5,000 out of the current year profit to provision for tax.

You are required to calculate the following ratios:

(a) Return on capital employed ratio

- (b) Current ratio
- (c) Fixed assets to net worth
- (d) Debt to equity capital
- (e) Return on owner's capital

Solution:

Raja & Sons Limited

	Rs.	Rs.
Working capital:		
Current assets:		
Bank balance	7,000	
Sundry debtors	13,500	
Stock	30,000	
Investments	25,000	75,500
Less: Current Liabilities		
Sundry creditors	30,000	
Provision for taxation	5,000	35,000
Working capital		40,500
Fixed assets		87,500
Total funds (capital) employed		1,28,000
Less: 6 % Debentures		20,000
Shareholder' equity		1,08,000
Represented by:		
Equity share capital		50,000
Preference share capital		10,000
Reserves		40,000
Profit and Loss a/c balance		8,000
		1,08,000
(a) Return on capital employed ratio		
Net profit for 2003		20,000
Add: Interest on debentures		1,200
	Total	21,200
Less: Provision for tax		5,000
Adjusted profits after tax		16,200

$$\text{Return} = \frac{16,200}{1,28,000} \times 100 = 12.7 \%$$

Note: It is presumed that the provision for taxation is sufficient to discharge tax liability.

(b) Current ratio

$$\frac{\text{Current asset}}{\text{Current liabilities}} = \frac{75,500}{35,000} = 2.16 : 1$$

Company is having current assets of Rs.2.16 for every Re.1 of current liabilities. As the ideal ratio is 2 : 1, the current ratio is very satisfactory.

(c) Fixed assets to net worth

$$\frac{\text{Fixed asset}}{\text{Net worth}} = \frac{87,500}{1,08,000} = 0.81 : 1$$

The ratio is less than 1 and it indicates that net worth is more than the fixed assets and that a portion of net worth is used for financing working capital. The proper ratio is 0.67, where the whole of long-term funds are considered. In this case as we have taken only net worth the situation is very satisfactory.

(d) Debt to equity capital

$$\frac{\text{Debt}}{\text{Equity capital}} = \frac{20,000}{50,000} = 2 : 5$$

This ratio indicates very low gearing. If one substitutes equity for equity capital in the denominator, the ratio will be further lower than it is now.

(e) Return on owners capital

$$\frac{\text{Profits available for owners}}{\text{Owners capital}} = \frac{20,000 - 5,000}{50,000 + 10,000} = \frac{15,000}{60,000} \times 100 = 25\%$$

The return is high even without trading on equity. It would have been much more had there been high gearing.

Problem No.3:

Following is the balance sheet of X Company Ltd:

BALANCE SHEET
As on 31st December, 1974

	Rs.		Rs.
Equity share capital	1,00,000	Cash in hand	2,000
6% Preference share capital	1,00,000	Cash at bank	10,000
7% Debentures	40,000	Bills receivable	30,000
8% Public debt	20,000	Investments	20,000
Bank overdraft	40,000	Debtors	70,000
Creditors	60,000	Stock	40,000
Outstanding creditors	7,000	Furniture	30,000

Proposed dividend	10,000	Machinery	1,00,000
Reserves	1,50,000	Land and Building	2,20,000
Provision for taxation	20,000	Goodwill	35,000
Profit and loss account	20,000	Preliminary expenses	10,000
	5,67,000		5,67,000

During the year provision for taxation was Rs.20,000. Debentures are repayable in 1987 and public debt in 1981. Sales during the year were Rs.3,00,000. Dividend proposed was Rs.10,000. Profit carried forward from the last year Rs.15,000.

You are required to calculate: (a) Short-term solvency ratios, (b) Long-term solvency ratios, and (c) Sales ratios.

Solution:

(a) Short-term solvency ratios

1. Current Ratio

$$\begin{aligned}
 \text{Current ratio} &= \frac{\text{Current Assets}}{\text{Current Liabilities}} \\
 &= \frac{\text{Rs.}(2,000 + 10,000 + 30,000 + 20,000 + 70,000 + 40,000)}{\text{Rs.}(40,000 + 60,000 + 7,000 + 10,000 + 20,000)} \\
 &= \frac{\text{Rs.1,72,000}}{\text{Rs.1,37,000}} = \frac{172}{137}
 \end{aligned}$$

Company is having current assets of Rs.172 as against current liabilities of Rs.137. There is a small margin of safety against fall in price and financial position is not very sound.

2. Quick Ratio

$$\begin{aligned}
 \text{Quick ratio} &= \frac{\text{Quick Assets}}{\text{Current Liabilities}} \\
 &= \frac{\text{Rs.1,32,000}}{\text{Rs.1,37,000}} = \frac{132}{137}
 \end{aligned}$$

Company's immediate resources for meeting current liabilities are a little less than obligations. Its financial position cannot be said to be very strong. This fact was supported by current ratio also.

(b) Long-term solvency ratios

2. Equity Ratio

$$\begin{aligned} \text{Equity ratio} &= \frac{\text{Total owned capital including accumulated profits}}{\text{Total capital}} \\ &= \frac{\text{Rs.}(1,00,000 + 1,00,000 + 1,50,000 + 20,000)}{\text{Rs. } 5,67,000} \\ &= \frac{\text{Rs.}3,70,000}{\text{Rs.}5,67,000} = \frac{370}{567} \end{aligned}$$

It means that out of every investment of Rs.567 in the firm, share holders' contribution is only Rs.370, i.e., the cushion against fall in price of assets in the case of liquidation of the company is only Rs.197. This margin is not very satisfactory.

2. Net income to debt service ratio

$$\begin{aligned} &= \frac{\text{Net income before charging interest and tax}}{\text{Interest on long-term debts}} \\ &= \frac{\text{Rs.}39,400}{\text{Rs.}35,000 + 4,400} \\ &= \frac{\text{Rs.}39,400}{\text{Rs.}4,400} = 9 \text{ times} \end{aligned}$$

Earning of the company from this angle is very sound.

Note:

	Rs.
(1) Profit for the year has been calculated as under:	
Profit and loss account as per B/S	20,000
Add: Transfer to proposed dividend	10,000
Add: Transfer to taxation reserve	20,000
	<hr/> 50,000
Less: Carried forward from last year	15,000
Profit for the year	<hr/> 35,000

Sales ratios

1. Sales to fixed assets = Sales : Fixed assets

$$= \text{Rs.}3,00,000 : \text{Rs.}3,85,000 = 60 : 77$$

Whether this ratio is satisfactory or not will be determined by comparing it either with standard ratio or with some ratio prevalent in that industry. Goodwill is included in fixed assets.

2. Sales to working capital = Sales : Working capital

$$= \text{Sales} : (\text{Current Assets} - \text{Current Liabilities})$$

$$= \text{Rs.}3,00,000 : (\text{Rs.}1,72,000 - \text{Rs.}1,37,000)$$

$$= \text{Rs.}3,00,000 : 35,000 = 60 : 7$$

Again, comment on suitability of ratio can be made only after comparing this ratio with other standard ratio.

Problem No:4

From the following information make out proprietor fund with as many details as possible.

Current Ratio	2.5 : 1
Liquid Ratio	1.5 : 1
Proprietor Ratio (Fixed Assets / Proprietor Fund)	0.75 : 1
Working Capital	Rs.60,000
Reserves & Surplus	Rs.40,000
Bank Over Draft	Rs.10,000
There is no long term loan.	

Solution:

$$\text{Current Ratio} = 2.5 : 1$$

$$\text{Current Assets} - \text{Current Liabilities} = \text{Working Capital}$$

$$2.5 - 1 = 1.5 = \text{Rs.}60,000.$$

$$\text{Rs.}60,000$$

$$1 = \frac{\text{Rs.}60,000}{1.5} \times 1 = \text{Rs.}40,000 = \text{Current Liabilities}$$

$$2.5 = 2.5 \times \text{Rs.}40,000 = \text{Rs.}1,00,000 = \text{Current Assets.}$$

$$\text{Current Liabilities} - \text{Bank Over draft} = \text{Quick Liabilities}$$

$$\text{Rs.}40,000 - \text{Rs.}10,000 = \text{Rs.}30,000 = \text{Quick Liabilities} = 1$$

$$\text{Quick Ratio} = 1.5 : 1$$

$$1 = \text{Rs.}30,000, 1.5 = \text{Rs.}45,000 = \text{Quick Assets.}$$

$$\text{Current Assets} - \text{Quick Assets} = \text{Stock}$$

$$\text{Rs.}1,00,000 - \text{Rs.}45,000 = \text{Rs.}55,000 = \text{Stock}$$

$$\text{Proprietors Fund} + \text{Current Liabilities} = \text{Fixed Assets} + \text{Current Assets}$$

$$\text{Proprietors Fund} - \text{Fixed Assets} = \text{Current Assets} - \text{Current Liabilities} = (\text{WC})$$

$$1 - 0.75 = 0.25 = \text{Rs.60,000.}$$

$$1 = \frac{\text{Rs.60,000}}{0.25} \times 1 = \text{Proprietors Fund} = \text{Rs.2,40,000}$$

$$0.75 = \frac{\text{Rs.60,000}}{0.25} \times 0.75 = \text{Fixed Assets} = \text{Rs.1,80,000}$$

$$\text{Proprietors Fund} - \text{Reserves and Surplus} = \text{Capital}$$

$$\text{Rs.2,40,000} - \text{Rs.40,000} = \text{Rs.2,00,000} = \text{Capital}$$

Balance Sheet

Liabilities	Amount Rs.	Assets	Amount Rs.
Capital	2,00,000	Fixed Assets	1,80,000
Reserves and Surplus	40,000	Quick Assets	45,000
Quick Liabilities	30,000	Stock	55,000
Bank Over Draft	10,000		
Total	2,80,000	Total	2,80,000

Problem No:5

From the following information prepare a Balance Sheet with as many details as possible:

Gross profit	Rs.80,000	Current assets	Rs.1,50,000
Gross profit to the cost of goods sold ratio	1/3	Accounts payable velocity	90 days
Stock velocity	6 times	Bills receivable	Rs.20,000
Opening stock	Rs.36,000	Bills payable	Rs.5,000
Accounts receivable velocity (year 360 days)	72 days	Fixed assets turn over ratio	8 times

Prepare Balance Sheet.

Solution:

(a) Cost of Goods Sold:

$$\text{Gross profit to Cost of goods sold} = 1/3$$

That is,

$$\text{If Gross profit is 1, cost of goods sold} = 3$$

$$\text{If Gross profit is Rs.80,000, cost of goods sold} = \text{Rs.2,40,000}$$

(b) Closing Stock:

$$\text{Stock velocity} = \frac{\text{Cost of goods sold}}{\text{Average stock}} = 6$$

$$= \frac{\text{Rs.2,40,000}}{\text{Average stock}} = 6$$

$$6 \times \text{Average stock} = \text{Rs.2,40,000}$$

$$\text{Average stock} = \frac{2,40,000}{6} = \text{Rs.40,000}$$

$$\text{Average stock} = \frac{\text{Opening stock} + \text{closing stock}}{2} = \text{Rs.40,000}$$

$$\text{Total stock (40,000} \times 2) = \text{Rs.80,000}$$

$$\text{Less: Opening stock} = \text{Rs.36,000}$$

$$\text{Closing stock} = \text{Rs.44,000}$$

(c) Debtors:

$$\begin{aligned} &\text{Debtors' velocity or Accounts receivable velocity} \\ &\text{Debtors} + \text{Bills receivable} \\ &= \frac{\text{Sales}}{\text{Debtors} + \text{Bills receivable}} \times 360 = 72 \text{ days} \end{aligned}$$

$$\begin{aligned} \text{Sales} &= \text{Cost of goods sold} + \text{Gross profit} \\ &= \text{Rs.2,40,000} + \text{Rs.80,000} = \text{Rs.3,20,000} \\ &\text{Debtors} + \text{Bills receivable} \\ &= \frac{3,20,000}{72 \times 360} = 72 \text{ days} \end{aligned}$$

Adopting cross multiplication

$$\begin{aligned} \text{Debtors} + \text{Bills receivable} &= \frac{72 \times 3,20,000}{360} = \text{Rs.64,000} \\ \text{Less: Bills receivable} &= \text{Rs.20,000} \end{aligned}$$

$$\begin{aligned} &\text{Debtors} \\ &\text{Rs.44,000} \end{aligned}$$

(d) Creditors:

$$\text{Creditors velocity} = \frac{\text{Creditors} + \text{Bills payable}}{\text{Purchase}} \times 360 = 90 \text{ days}$$

Calculation of purchase:

$$\begin{aligned}\text{Opening stock} + \text{Purchases} - \text{Closing stock} &= \text{Cost of goods sold} \\ \text{Purchases} &= \text{Cost of goods sold} + \text{Closing stock} - \text{Opening stock} \\ \text{Rs.36,000} + \text{Purchase} - \text{Rs.44,000} &= \text{Rs.2,40,000} \\ \text{Purchases} &= 2,40,000 + 44,000 - 36,000 = \text{Rs.2,48,000}\end{aligned}$$

$$\begin{aligned}\text{Creditors} + \text{Bills payable} \\ = \frac{\text{Creditors} + \text{Bills payable}}{2,48,000} \times 360 = 90 \text{ days}\end{aligned}$$

$$\begin{aligned}\text{Creditors} + \text{Bills payable} &= \frac{90 \times 2,48,000}{360} = \\ \text{Rs.62,000}\end{aligned}$$

$$\begin{aligned}\text{Less: Bills payable} &= \\ \text{Rs.5,000}\end{aligned}$$

$$\begin{aligned}\text{---} \\ \text{Rs.57,000} \quad \text{Creditors}\end{aligned}$$

(e) Fixed assets:

$$\text{Fixed assets turnover ratio} = \frac{\text{Cost of sales}}{\text{Fixed assets}} = 8$$

$$\begin{aligned}&= \frac{2,40,000}{\text{Fixed assets}} = 8\end{aligned}$$

$$8 \times \text{Fixed assets} = 2,40,000$$

$$\begin{aligned}\text{Fixed assets} &= \frac{2,40,000}{8} = \text{Rs.30,000}\end{aligned}$$

		RS.
Total current assets (given)		1,50,000
Less:	Rs.	
Stock	44,000	
Debtors	44,000	
Bills receivable	20,000	
		1,08,000
Other current assets		42,000

Balance Sheet as on -----

LIABILITIES	RS.	ASSETS	RS.
Capital (bal.fig)	1,18,000	Fixed assets	30,000
Creditors	57,000	Stock	44,000
Bills payable	5,000	Debtors	44,000
		Bills receivable	20,000
		Others current assets	42,000
	1,80,000		1,80,000

Problem No. 6

Debtors' Velocity	3 months
Creditors' velocity	2 months
Stock velocity	8 times
Capital-turnover ratio	2.5 times
Fixed assets-turnover ratio	8 times
Gross Profit turnover ratio	25%

Gross profit in a year amounts to Rs.80,000. There is no long term loan or overdraft. Reserves and surplus amount to Rs.28,000. Liquid assets are Rs.97,333. Closing stock of the year is Rs.2,000 more than the opening stock Bills receivable amount to Rs.5,000 and Bills payable to Rs.2,000. Prepare balance sheet.

Solution:

a) Sales

$$\text{Gross Profit Ratio} = \text{G.P./Sales} \times 100 = 25\%$$

$$\text{If Gross Profit is Rs.25, Sales} = \text{Rs.100}$$

$$\text{If Gross profit is Rs.80,000, Sales} = 80,000/25 \times 100 = \text{Rs.3,20,000}$$

b) Sundry Debtors

$$\text{Debtors Velocity} = \frac{\text{Debtors + Bills receivables}}{\text{Credit sales}} \times 12 = 3 \text{ months}$$

$$\text{Debtors + Bills Receivables} / 3,20,000 \times 12 = 3 \text{ months}$$

By adopting cross multiplication,

$$\text{Debtors + Bills receivable} = \text{Rs. } 80,000$$

$$\text{Less: Bills receivable} = \text{Rs. } 5,000$$

$$\text{Debtors} = \text{Rs. } 75,000$$

c) Closing Stock

$$\text{Stock Velocity} = \text{Cost of goods sold} / \text{Average stock} = 8 \text{ times}$$

$$\begin{aligned} \text{Cost of goods sold} &= \text{Sales} - \text{Gross profit} \\ &= \text{Rs. } 3,20,000 - \text{Rs. } 80,000 \\ &= \text{Rs. } 2,40,000 \end{aligned}$$

$$8 \times \text{Average Stock} = \text{Rs. } 2,40,000$$

$$\text{So Average stock} = \text{Rs. } 30,000$$

$$\text{Average stock} = \text{Opening stock} + \text{Closing stock} / 2 = \text{Rs. } 30,000$$

$$\text{Total stock (Rs. } 30,000 \times 2) = \text{Rs. } 60,000$$

$$\text{Less : Excess} = \text{Rs. } 2,000$$

$$= \text{Rs. } 58,000$$

$$\text{Rs. } 58,000$$

$$\text{Opening stock} = \text{Rs. } 58,000 / 2 = \text{Rs. } 29,000$$

$$\text{Closing stock} = 29,000 + 2,000 = \text{Rs. } 31,000$$

d) Sundry Creditors

$$\text{Creditors Velocity} = \frac{\text{Creditors + Bills payable}}{\text{Credit purchases}} \times 12 = 2 \text{ months}$$

Credit purchases

Calculations of purchases

Opening stock + Purchases – Closing stock = Cost of goods sold

Rs.29,000+ Purchases – Rs.31,000 = Rs.2,40,000

Purchases = Rs.2,42,000

Creditors + Bills payable
----- X 12 = 2

Rs.2,42,000

Creditors + Bills payable = Rs.40,333

Less: Bills payable = Rs. 2,000

Creditors Rs.38,333

e) Fixed Assets

Fixed Assets Turnover Ratio = Sales/Fixed assets = 8

Fixed assets X 8 = Rs.3,20,000

Fixed assets = Rs.3,20,000 / 8 = Rs.40,000

f) Proprietors Fund

As there is no long term loan,

Proprietors' Funds = Fixed assets + Stock + Liquid assets – Current liabilities

= Rs.40,000 + Rs.31,000 + Rs.97,333 - Rs.40,333

= Rs.1,28,000

g) Cash and Bank Balance

Liquid assets or quick assets Rs.97,333

Less : Debtors 75,000

Bills receivables Rs.5,000 Rs.80,000

Cash and Bank Rs.17,333

Balance sheet as on

Share capital (b/f)	Rs.100000	Fixed assets	Rs.40000
Reserves and surplus	28000	stock	Rs.31000
Bills payable	Rs. 2000	Debtors	Rs.75000
Sundry creditors	Rs.38333	Bills receivable	Rs.5000
		Cash and Bank	Rs.17333
	-----		-----
	Rs. 168333		Rs.168333

Problem No : 7

From the following details prepare statement of proprietary funds with as many details as possible:

- i) Stock velocity : 6
- ii) Capital turnover ratio (on cost of sales) : 2
- iii) Fixed Assets turnover ratio (on cost of sales) : 4
- iv) Gross profit turnover ratio : 20 per cent
- v) Debtors velocity : 2 months
- vi) Creditors velocity : 73 days

The gross profit was Rs.60000. Reserves and Surplus amount to Rs.20000.

Closing stock was Rs.5000 in excess of opening stock.

Solution**a) Gross Profit**

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

If Gross profit is Rs.20, Sales is Rs.100

$$\text{If Gross profit is Rs.60000, Sales} = \text{Rs.60000} \times 100 \div 20 = \text{Rs.300000}$$

b) Stock

Stock Velocity

$$\text{Cost of goods sold} \div \text{Average stock} = 6 \text{ times}$$

$$\begin{aligned} \text{Cost of goods sold} &= \text{Sales} - \text{Gross profit} = \text{Rs.300000} - \text{Rs.60000} \\ &= \text{Rs.240000} \end{aligned}$$

$$\text{Average stock} = \text{Rs.240000} \div 6 = \text{Rs.40000}$$

$$\text{Average stock} = \frac{\text{Opening stock} + \text{Closing stock}}{2} = \text{Rs.40000}$$

$$\text{Total Stock} (40000 \times 2) = \text{Rs.80000}$$

$$\text{Less : Excess} = \text{Rs.5000}$$

$$\text{Rs.75000}$$

$$\text{Opening stock} = \text{Rs.75000} \div 2 = \text{Rs.37500}$$

$$\text{Closing stock} = \text{Rs.37500} + 5000 = \text{Rs.42500}$$

C)Debtors

Debtors + Bills receivable

$$\text{Debtors velocity} = \frac{\text{Debtors + Bills receivable}}{\text{Credit sales}} \times 12 = 2 \text{ months}$$

Credit sales

There are no receivable bills. Hence,

Debtors

$$\begin{aligned} \text{Debtors velocity} &= \frac{\text{Debtors}}{\text{Credit sales}} \times 12 = 2 \\ &= \frac{300000}{\text{Credit sales}} \times 12 = 2 \end{aligned}$$

Adopting cross multiplication,

$$\text{Debtors} = 300000 \times 2 / 12 = \text{Rs.}50000$$

d) Creditors Velocity

$$\begin{aligned} & \frac{\text{Creditors + Bills payable}}{\text{Credit purchases}} \times 365 = 73 \text{ days} \\ & = \frac{\text{Creditors + Bills payable}}{\text{Credit purchases}} \times 365 = 73 \text{ days} \end{aligned}$$

Purchases = Cost of goods sold + closing stock – opening stock

$$\text{Rs.}240000 + \text{Rs.}42500 - \text{Rs.}37500$$

$$= \text{Rs.}245000$$

$$\text{Hence the creditors} = 73 \text{ days} \times \text{Rs.}245000 / 365 = \text{Rs.}49000$$

f) Fixed Assets

Fixed Assets turnover ratio (Based on cost of sales)

$$= \text{Cost of Sales} / \text{Fixed assets} = 4$$

$$\text{the Cost of sales} = \text{Rs.}240000$$

$$\text{so the Fixed assets} = \text{Rs.}240000 / 4 = \text{Rs.}60000$$

g) Share Capital

Capital turnover ratio (based on cost of sales)

$$= \text{Cost of Sales} / \text{Total Capital} = 2$$

$$\text{Rs.}240000 / \text{Total Capital (proprietors fund)} = 2$$

$$\text{Proprietor funds} = \text{Rs.}120000 (\text{Rs.}240000 / 2)$$

$$\text{Less Reserve \& Surplus} = \text{Rs.} 20000$$

$$\begin{aligned} & \text{Share capital} \quad \text{Rs.}100000 \\ & \text{Reserve \& Surplus} \quad \text{Rs.} 20000 \\ & \text{Total Capital} \quad \text{Rs.}120000 \end{aligned}$$

h) Cash

BALANCE SHEET

	Rs.		Rs.
Share capital	100000	Cash (bal. figure)	16500
Reserves and surplus	20000	Debtors	50000

Creditors	49000	Stock	42500
		Fixed assets	60000
	-----		-----
	169000		169000
	-----		-----

Statement of Proprietary Funds

Fixed Assets Rs.60000

Current assets

Cash 16500

Debtors 50000

'Stock 42500

109000

Less current liability

Creditors 49000

Rs.60000

Rs.120000

Represented by:

Share capital Rs.100000

Reserves and surplus Rs. 20000

Rs.120000

Problem No. 8

From the following particulars, prepare the balance sheet of X Ltd., which has only one class of share capital.

Sales for the year – Rs.20,00,000

Gross profit ratio - 25%

Current ratio – 1.5

Quick assets (cash and debtors) ratio – 1.25

Stock turnover ratio	– 15
Debts collection period	– 1.5 months
Turnover to fixed assets	– 1.5
Ratio of reserves to share capital	– 0.33
Fixed assets to net worth	– 0.83

(The turnover refers to cost of sales and the term stock refers to closing stock).

Solution

a) Gross Profit

Gross Profit Ratio = Gross profit / Sales X 100 = 25%

Sales = Rs. 20,00,000 therefore G.P = Rs.5,00,000

b) Cost of goods sold

$$\begin{aligned}
 \text{Cost of goods sold} &= \text{Sales} - \text{Gross Profit} \\
 &= \text{Rs.20,00,000} - \text{Rs.5,00,000} \\
 &= \text{Rs.15,00,000}
 \end{aligned}$$

c) stock

Stock turnover ratio (based on closing stock)

$$\begin{aligned}
 &\frac{\text{Cost of goods sold}}{\text{Closing stock}} = 15 \\
 &\frac{15,00,000}{\text{Closing stock}} = 15
 \end{aligned}$$

$$15,00,000 / \text{Closing stock} = 15$$

$$\text{Closing stock} = \text{Rs.1,00,000} (15,00,000/15)$$

d) Current Assets

$$\text{Current ratio} = \text{C.A} / \text{C.L} = 1.5 : 1$$

$$\text{Quick ratio} = \text{Q.A} / \text{Q.L} = 1.25 : 1$$

As there is no bank overdraft, quick liabilities = Current liabilities

The difference in ratios therefore represents only stock.

Current Assets – Quick assets = Stock

$$1.5 - 1.25 = 0.25$$

if the stock is Rs.0.25, current assets are 1.5

The stock is Rs.1,00,000 , the current assets are = Rs.6,00,000

e) Current Liability

$$C. R = C.A / C.L = 1.5.: 1$$

If 1.5 is Rs.6,00,000 therefore the current liability = Rs.4,00,000

f) Debtors

Debt Collection Period

$$\frac{\text{Debtors} + \text{Bills Receivable}}{\text{Credit Sales}} \times 12 = 1.5$$

There fore no bills receivables

$$\text{Debtors} = \text{Rs.}20,00,000 \times 1.5 / 12 = \text{Rs.}2,50,000$$

g) Quick Assets

If the stock is 0.25, quick assets are 1.25

If the stock is Rs.1,00,000, quick assets are

$$1,00,000 / .25 \times 1.25 = \text{Rs.}5,00,000$$

h) Cash

$$\text{Quick assets (Debtors + Cash)} = \text{Rs.}5,00,000$$

$$\text{Less: Debtors} = \text{Rs.}2,50,000$$

$$\text{Cash} = \text{Rs.}2,50,000$$

i) Fixed Assets

Turnover to fixed assets (based on cost of sales)

$$\text{Cost of goods sold} / \text{Fixed assets} = 1.5$$

$$15,00,000 / \text{Fixed assets} = 1.5$$

1.5 X Fixed Assets = Rs.15,00,000

So fixed assets = Rs.10,00,000.

j) Net Worth

Fixed assets to Networth = Fixed assets / Net worth = 0.83

If fixed assets is Rs.10,00,000 the net worth is Rs.12,00,000

k) Share Capital

Net worth or Proprietary fund = Share capital + Reserves and surplus

Ratio of Reserves to share capital = 0.33

If net worth is Rs.12,00,000 the share capital is

Rs.12,00,000 / 4 x 3 = Rs.9,00,000

Reserves and Surplus

Share capital + Reserves and surplus = Rs.1200000

Less share capital = Rs. 900000

Reserve and Surplus

Rs. 300000

Balance sheet of X Limited

Share Capital 1000000	900000	Fixed Assets	
Reserves and surplus 100000	300000	Stock	
Creditors (b/f) 250000	400000	Debtors	
		Cash	250000
	1600000		1600000

Problem No . 9

From the following information you are required to prepare a balance sheet.

Current ratio	- 1.75
Liquid ratio	- 1.25
Stock turnover ratio (cost of sales / closing stock)	- 9
Gross profit ratio	- 25%

Debt collection period	– 1.5 months
Reserves and surplus to share capital	- 0.2
Turnover to fixed assets – (based on cost of sales)	– 1.2
Capital gearing ratio	– 0.5
Fixed assets to net worth	– 1.25
Sales for the year	– Rs.1200000

Solution:

1) Cost of Sales

Sales	Rs.1200000
Gross profit	Rs.300000

Cost of sales	Rs.900000

2) Stock

Stock turnover ratio

$$\text{Cost of sales} / \text{Closing} = 9$$

$$\text{Closing stock} = 900000 / 9 = \text{Rs.100000}$$

3) Current Assets

$$\text{Current Ratio} = \text{C.A} / \text{C.L}$$

$$\text{Current assets} - \text{Quick assets} = \text{Stock}$$

$$1.75 - 1.25 = 0.50$$

If the stock is 0.50, Current assets are 1.75

$$\text{If the stock is s.100000, current assets are } 100000 \times 1.75 / 0.50 = \text{Rs.350000}$$

If the current assets are Rs.350000, Current liabilities

$$= \text{Rs.350000} \times 1 / 1.75 = \text{Rs.200000}$$

4) Quick Assets (Debtors and Cash)

$$\text{Quick assets} = \text{Current assets} - \text{Stock}$$

$$= \text{Rs.350000} - \text{Rs.100000} = \text{Rs.250000}$$

5) Debtors

$$\text{Debt Collection Period} = \text{Debtors} + \text{Bills Receivable} / \text{credit sales} \times 12$$

There are no bills receivable. Hence.

$$\text{Debtors Turnover Ratio} = \text{Debtors} / 1200000 \times 1.5 \text{ months}$$

$$\text{Debtors} = 1200000 \times 1.5 / 12 = \text{Rs.150000}$$

6) Cash

Debtors and Cash	Rs.2,50,000
Less: Debtors	Rs.1,50,000

Cash	Rs.1,00,000

7) Fixed Assets

$$\text{Turnover to Fixed Assets} = \frac{\text{Cost of Sales}}{\text{Fixed Assets}} = 1.2$$

$$\text{Turnover to Fixed Assets} = \frac{9,00,000}{\text{Fixed Assets}} = 1.2$$

$$\text{Fixed Assets} = \frac{9,00,000}{1.2} = \text{Rs.7,50,000}$$

$$\text{Fixed Assets to Networth} = \frac{\text{Fixed Assets}}{\text{Networth}} = 1.25$$

$$= \frac{7,50,000}{\text{Networth}} = 1.25$$

$$= \frac{7,50,000}{1.25} = \text{Rs.6,00,000}$$

8) Share Capital

Reserves and Surplus to Share Capital

Reserves and Surplus

$$= \frac{\text{Reserves and Surplus}}{\text{Share Capital}} = 0.2:1 \text{ (or) } 2:10$$

Share Capital

Proprietary Fund = Share Capital + Reserve and Surplus

$$12 = 10 + 2$$

If the Proprietary fund is 12, share capital is 10

If the Proprietary fund is Rs.6,00,000, share capital is

6,00,000

$$= \frac{6,00,000}{12} \times 10 = \text{Rs.}5,00,000$$

9) Reserves and Surplus

Proprietary Fund = Rs.6,00,000

Less: Share Capital = Rs.5,00,000

Reserves & Surplus Rs.1,00,000

10) Long-term Liabilities

Fixed Interest bearing security

$$\text{Capital Gearing ratio} = \frac{\text{Fixed Interest bearing security}}{\text{Equity Shareholder's funds}} = 0.5$$

Equity Shareholder's funds

Fixed Interest bearing security

$$= \frac{\text{Fixed Interest bearing security}}{6,00,000} = 0.5$$

Fixed interest bearing security

5

$$= 6,00,000 \times \frac{5}{10} = \text{Rs.}3,00,000$$

10

$$= 3,00,000$$

Balance Sheet

Liabilities	Amount Rs.	Assets	Amount Rs.
Share Capital	5,00,000	Fixed Assets	7,50,000
Reserves and Surplus	1,00,000	Stock	1,00,000
Long-term Loan	3,00,000	Debtors	1,50,000
Current Liabilities	2,00,000	Cash	1,00,000
Total	11,00,000	Total	11,00,000

Problem: 10

The following ratios and other data relate to the financial statements of SKF Ltd., for the year ended 31-12-1999.

Working Capital Ratio	1.75 to 1
Acid Test Ratio	1.27 to 1
Working Capital	Rs.33,000
Fixed Assets to Shareholders' Equity Ratio	0.625 to 1
Inventory turnover (based on closing stock)	4 times
Gross Profit Ratio	40%
Earning per share	Rs.0.50
Average age of accounts receivable (based on calendar year 365 days)	73 days
Share capital Number of shares	20,000
Earnings for the year as a percentage of share capital	25%

The company had no prepaid expenses, deferred revenue expenses, intangible assets or long-term liabilities. Prepare Profit and Loss Account and Balance Sheet.

Solution:

1. Current Assets

$$\begin{aligned}
 \text{Working Capital Ratio} &= 1.75 \text{ to } 1 \\
 \text{Working Capital} &= \text{Current assets} - \text{Current Liabilities} \\
 &= 1.75 - 1 = 0.75
 \end{aligned}$$

If the working capital is 0.75, current assets are 1.75

If the working capital is Rs.33,000, current assets are

$$= 33,000 \times \frac{175}{75} = \text{Rs.}77,000$$

2. Current Liabilities

If Current Assets are 1.75, current liabilities = 1

If current Assets are Rs.77,000, current liabilities

$$= 77,000 \times \frac{100}{175} = \text{Rs.}44,000$$

3. Stock

Stock = Current Assets – Quick Assets

$$= 1.75 - 1.27 = 0.48$$

If current assets – are 1.75, stock = 0.48

If current assets are Rs.77,000, stock

$$= 77,000 \times \frac{48}{175} = \text{Rs.}21,120$$

4. Shareholders' Funds

Fixed Assets to shareholders' equity = 0.625

If shareholders' equity is 1, fixed assets are 0.625

Shareholders' equity = Fund assets + Net current assets

$$1 = 0.625 + \text{Net current assets}$$

$$\therefore \text{Net current assets or working capital} = 1 - 0.625 = 0.375$$

If working capital is 0.375, shareholders' fund = 1

If working capital is Rs.33,000, shareholders' fund

$$= 33,000 \times \frac{100}{375} = \text{Rs.}88,000$$

5. Fixed Assets

If Shareholders' equity is 1, fixed assets = 0.625

If Shareholders' equity is Rs.88,000, fixed assets

$$\begin{aligned} & 625 \\ & = 88,000 \times \frac{\quad}{1000} = \text{Rs.}55,000 \end{aligned}$$

Note: Shareholders' equity refers to shareholders' funds.

6. Cost of Sales

$$\begin{aligned} \text{Inventory Turnover} &= \frac{\text{Cost of Sales}}{\text{Closing Stock}} = 4 \\ &= \frac{\quad}{21,120} = 4 \end{aligned}$$

$$\therefore \text{Cost of Sales} = 21,120 \times 4 = \text{Rs.}84,480.$$

7. Gross Profit

$$\begin{aligned} \text{Gross Profit Ratio} &= 40\% \text{ on sales} \\ \text{Sales} &100\% \\ \text{Less: Gross Profit} &40\% \\ &\text{-----} \\ &\text{Cost of Sales} &= 60\% \\ &\text{-----} \end{aligned}$$

If cost of sales is 60%, sales is 100%

If cost of sales is Rs.84,480, sales is

$$\begin{aligned} & 84,480 \\ & = \frac{\quad}{60} \times 100 = \text{Rs.}1,40,800 \\ & 40 \\ \text{Gross Profit} &= 1,40,800 \times \frac{\quad}{100} = \text{Rs.}56,320 \end{aligned}$$

8. Net Profit

Earning per share 0.50

Earnings on 20,000 shares = $20,000 \times 0.50 = \text{Rs.}10,000$

9. Expenses

Expenses = Gross profit – Net Profit

= $\text{Rs.}56,320 - \text{Rs.}10,000 = \text{Rs.}46,420$

10. Debtors

Debt collection period

(Average age of accounts receivable)

$$\frac{\text{Debtors}}{\text{Credit Sales}} = \frac{\text{Debtors}}{\text{Credit Sales}} \times \text{No. of working days} = 73$$

$$\frac{\text{Debtors}}{1,40,800} = \frac{\text{Debtors}}{1,40,800} \times 365 = 73 \text{ days}$$

By cross multiplication,

$$\text{Debtors} = \frac{1,40,800 \times 73 \text{ days}}{365 \text{ days}} \times \text{Rs.}28.160$$

11. Share Capital

Net Profit is 25% of share capital

If Net Profit is Rs.25, share capital = Rs.100

If Net Profit is Rs.10,000, share capital

$$\text{Capital} = \frac{10,000}{25} \times 100 = \text{Rs.}40,000$$

12. Reserves and Surplus

Shareholders' Fund = Rs.88,000

Less: Share Capital = Rs.40,000

Reserves & Surplus = Rs.48,000
Less: Net Profit = Rs.10,000

Net Reserves & Surplus = Rs.38,000

Profit and Loss Account for the year ended 31 st December, 1999			
To Cost of sales	Rs. 84,480	By Sales	Rs. 1,40,800
To Gross profit	56,320		
	1,40,800		1,40,800
To Expenses (Operating & Non Operating)	46,320	By Gross Profit b/d	56,320
To Net profit	10,000		
	56,320		56,320
Balance Sheet as at 31 st December, 1999			
Share capital 20,000 shares of Rs.2 eac	Rs. 40,000	Fixed Assets	Rs. 55,000
Reserve and Surplus: 38,000		Current Assets:	
Profit for the year 10,000	48,000	Cash	27,720
Current Liabilities	44,000	Accounts Receivable	28,160
		Stock	21,120
	1,32,000		1,32,000

SUMMARY

Ratio analysis is one of the techniques of financial analysis where ratios are used as a yardstick for evaluating the financial conditions and performance of a firm. Analysis and interpretation of various accounting ratios, gives a skilled and experienced analyst a better understanding of the financial condition and performance of the firm than what he could have obtained only through a perusal of financial statements.

Ratios can be classified into different categories depending upon the basis of classification.

The traditional classification has been on the basis of the financial statement to which the determinants of a ratio belong. On this basis the ratios could be classified as :

Profit and Loss Account Ratios, i.e. ratios calculated on the basis of the items of the profit and loss account only e.g., gross profit ratio, stock turnover ratio, etc.,

Balance sheet ratio, i.e. ratio calculated on the basis of the figures of the Balance Sheet only. Current Ratio, Debt-equity ratio, etc.,

Composite Ratios or inner-statement ratios, i.e. ratio based on figures of profit and loss account as well as the balance sheet, e.g. fixed assets turnover ratio, overall profitability ratio, etc.,

In order that ratios serve as a tool for financial analysis, they are now classified as, Profitability Ratio, Coverage Ratios, Turnover Ratios, and Financial Ratio (Liquidity ratios & Stability Ratios).

GLOSSARY

Profitability Ratios

Profitability is an indication of the efficiency with which the operations of the business are carried on. Poor operational performance may indicate poor sales and hence poor profit. A lower profitability may arise due to the lack of control over the expenses.

Turnover Ratio

The turnover ratios indicate the efficiency with which the capital employed is rotated in the business. The overall profitability of the business depends on two factors: I) the rate of return on capital employed ii) the turnover, i.e., the speed at which the capital employed in the business rotates.

Financial Ratios

Financial ratios indicate about the financial position of the company. A company is deemed to be financially sound if it is in a position to carry on its business smoothly and meet its obligations, both short-term as well as long term, without strain.

Price Earning Ratio

This ratio indicates the number of times the earning per share is covered by its market price. This is a parameter for investor whether to buy a particular share or not.

Debt-Equity Ratio

The debt-equity ratio is determined to ascertain the soundness of the long-term financial policies of the company. It is also External – Internal ratio.

KEY TO CHECK YOUR PROGRESS – II

3. (a) 4.(a) 5. (c) 6.(c) 7.(d) 8 (b) 9.(a) 10.(b) 11.(a) 12.(a) 13.(c)
14.(c)

MODEL QUESTIONS

1. What are the long-term solvency ratios? How will these be used in analysis of long-term financial stability of the firm?
2. Write a note on the following profitability ratios.
 - a. Return on Capital Employed
 - b. EPS and Cash EPS
 - c. Gross Profit and Net Profit margins
 - d. Return on assets and return on net worth
3. “Activity or turnover ratios measure how effectively the firm employs its resources”. Elucidate.
4. Explain the limitations of ratio analysis.
5. Discuss briefly the nature and conditions on applicability of ratio analysis for inter-firm and intra firm comparison.

Problem No. 1

Calculate the following for the year 1990 and 1991 using figures made available:

- a) Return on Capital Employed b) Current Ratio c) Debt / Equity Ratio d) Fixed Assets Turnover Ratio e) Inventory Ratio f) Earning Per Share and g) Dividend Cover.

Liabilities	1990	1991	Assets	1990	1991
Share capital of Rs.10 each	1000	1000	Fixed assets(Gross block) 3000		4000
Reserves and surplus	800	1000	Less: Depreciation 1400	1600	2000
Secured term loan	2000	2400		2400	2800
Cash credit from banks	1000	1500	Stock	500	900
Sundry creditors	900	1100	Debtors	1200	1300
			Other current assets		

EXTRACTS FROM PROFIT AND LOSS ACCOUNT

For the year ended 31st Dec.(Rs. In laksh)

	1990	1991
Sales	4800	7200
Profit before depreciation, interest and tax	1500	2400
Depreciation	480	600
Interest on term loans	420	600
Tax	300	600
Dividends	100	150

Problem No.3

From the following details, prepare Statement of Proprietary Funds with as many details as possible:

- i) Stock velocity = 6
- ii) Capital turnover ratio (on cost of sales) = 2
- iii) Fixed assets turnover ratio (on cost of sales) = 4
- iv) Gross profit turnover ratio = 20 per cent
- v) Debtors' velocity = 2 months
- vi) Creditors velocity = 73 days

The gross profit was Rs.60000. Reserves and Surplus amount to Rs.20000. Closing Stock was Rs.5000 in excess of Opening Stock.

Problem No.4

From the following particulars prepare the Balance Sheet:

Current ratio is 1.75

Liquid ratios is 1.25

Stock turnover ratio (closing stock) is 9 times

Gross profit ratio is 35%

Debt collection period is 1.5 month.

Reserves to capital is 0.2

Turnover of fixed assets is 1.2

Capital gearing ratio is 0.6

Fixed assets to net worth is 1.25

Sales for the year is Rs.1.25

Problem No.3

From the following details, prepare Statement of Proprietary Funds with as many details as possible:

vii)	Stock velocity	= 6
viii)	Capital turnover ratio (on cost of sales)	= 2
ix)	Fixed assets turnover ratio (on cost of sales)	= 4
x)	Gross profit turnover ratio	= 20 per cent
xi)	Debtors' velocity	= 2 months
xii)	Creditors velocity	= 73 days

The gross profit was Rs.60000. Reserves and Surplus amount to Rs.20000.

Closing Stock was Rs.5000 in excess of Opening Stock.

Problem No.4

From the following particulars prepare the Balance Sheet:

Current ratio is 1.75

Liquid ratios is 1.25

Stock turnover ratio (closing stock) is 9 times

Gross profit ratio is 35%

Debt collection period is 1.5 month.

Reserves to capital is 0.2

Turnover of fixed assets is 1.2

Capital gearing ratio is 0.6

Fixed assets to net worth is 1.25

Sales for the year is Rs.1.25

CHAPTER 6 FUND FLOW STATEMENT

STRUCTURE

6.1	Introduction
6.2	Learning Objectives
6.3	Current Assets
6.4	Non-Current Assets
6.5	Current Liabilities
6.6	Non-Current Liabilities
6.7	Preparation of Fund Flow Statement
6.8	Schedule of Changes in Working Capital
6.9	Rules for Preparing Schedules
	Check your Progress
Summary	
Glossary	
Key to Check your Progress	
Model Questions	

6.1 INTRODUCTION

Fund means cash or equivalents to cash or working capital. Working capital may be classified into two (i.e) gross working capital and net working capital. Gross working capital means the total value of current assets. Net working capital means difference between current assets and current liabilities. Flow means change. Thus flow fund refers to changes in working capital, may be of either in flow or out flow. Current assets means those assets that can be easily converted or realized into cash or consumed during the normal operating cycle of the business. The following are the examples of current assets

6.2. LEARNING OBJECTIVES

After completing this chapter, you should be able to:

- ❖ to calculate net increase or decrease in working capital
- ❖ to arrive at funds from operation
- ❖ to identify various internal and external sources of funds
- ❖ to use the fund flow statements as an analytical tool

6.3 CURRENT ASSETS

Cash in hand	
Cash at Bank	
Bills Receivable	
Sundry Debtors	
Short-term loans & Advances	
Marketable Investments	
Inventories, such as Raw Materials, work in-progress, Finished goods	
Prepaid Expenses	
Accrued Income	

6.4 NON-CURRENT ASSETS

1. Goodwill
2. Land
3. Building
4. Plant and Machinery
5. Furniture and fittings
6. Trade Mark
7. Patent Right
8. Long-term Investment
9. Discounts on Issues of shares and debentures
10. Other deferred expenses

6.5 CURRENT LIABILITIES

The term 'current liabilities' is used principally to designate such obligations whose liquidation is reasonably expected to require the use of assets classified as current assets in the same balance sheet or the creation of other current liabilities or those expected to be satisfied within a relatively short period of time usually one year. In modern version current liabilities means as all obligations repayable within a year or one operating cycle whichever is longer. The following are the examples of current liabilities.

1. Bills payable
2. Sundry Creditors
3. Expenses outstanding
4. Dividends payable
5. Bank overdraft
6. Short-term loans
7. Provision against current assets
8. Provision for taxation.

6.6 NON-CURRENT LIABILITIES

Equity share capital
 Preference share capital
 Debentures
 Long-term loans
 Share premium
 Share forfeited
 Profit and loss (Balance of profit)
 Capital reserve
 Capital redemption reserve

6.7 PREPARATION OF FUND FLOW STATEMENT

For the purpose of preparing fund flow statement it is necessary to find out the 'Sources' and application of funds.

Sources of Funds

The sources of funds can be both internal as well as external.

Internal Sources of Fund. Fund from operation is the only internal sources of funds. The fund from operations can be found out by adding the following items to net profit.

Calculation of Fund from Operation

Net Profit

Add depreciation of fixed assets

Preliminary expenses or Goodwill written off.

All provisions and appropriations

Loss on sale on fixed assets

Less or deduct the following items as they do not increase funds

Profit on sale of fixed assets

Profit on revaluation of fixed assets

Non-operating incomes (dividend, rent etc)

The resultant figure is known as fund from operations.

Following are the extracts from the balance sheet of a company as on 31st March 2002 and 31st March 2003. You are required to calculate fund from operations.

Problem No.1

	As on 31 st March	
	2002	2003
Profit and Loss Appropriation Account	60,000	80,000
General Reserve	40,000	50,000
Goodwill	20,000	10,000
Preliminary Expenses	12,000	8,000
Provisions for Depreciation Machinery	20,000	24,000

The fund from operation can be found out by preparing adjusted profit and loss account.

Solution:

Adjusted Profit and Loss Account

Particulars	Rs.	Particulars	Rs.
To transfer to general reserve	10,000	By Balance B/d	60,000
To transfer to Goodwill	10,000	By fund from operations	48,000
To preliminary expenses written off	4,000	(Balancing figures)	
To provisions for depreciation	4,000		
To balance C/d (closing Balance)	80,000		
Total	1,08,000	Total	1,08,000

External Sources of Funds

External sources of funds include:

1. Sale of fixed assets and long-term investments
2. Increase in share capital-issue of shares for cash or for the any other current assets.
3. Long-term loans, such as debentures and borrowing from financial institutions

Decrease in working capital.

Application Of Fund Or Uses Of Fund

Applications of funds means out flow funds. The following are some of the purposes for which funds may be used.

1. Purchase of fixed assets, like land, buildings, plant, machinery, long-term investments, etc., results in decreasing current assets without any decreasing current liabilities. Hence there will be flow funds. But in case of shares or debentures issued for acquisition of fixed assets there will be no flow of funds.
2. Payment of fixed liabilities. All payment of long-term liabilities such as redemption of debentures or redemption of redeemable preference shares results in reduction of working capital and hence, it is considered as an application of funds.
3. Payment of dividend, tax etc., Payment of dividend and tax results in decrease of fixed liabilities and therefore funds will be reduced. Hence it is an application of funds.

6.8 SCHEDULE OF CHANGES IN WORKING CAPITAL

A fund flow statement depicts changes in working capital. Hence it is better to prepare schedule changes in working capital first before preparing fund flow statement.

The following is a specimen of schedule of changes in working capital.

<i>Particulars</i>	<i>31st March 2000</i>	<i>31st March 2001</i>	<i>Increase</i>	<i>Decrease</i>
Current Assets				
Cash	10,000	15,000	5,000	
Bank	40,000	60,000	20,000	
Sundry Debtors	40,000	35,000		5,000
Bills Receivable	15,000	8,000		7,000
Stock	70,000	80,000	10,000	
Current Liabilities				
Sundry Creditors	15,000	20,000		5,000
Bills Payable	20,000	13,000	7,000	
Net Increase in working capital				25,000
Total			42,000	42,000

6.9 RULES FOR PREPARING SCHEDULES

- Increase in a current asset, results in increase (+) in “Working Capital”
- Decrease in a current asset, results in decrease (-) in “Working Capital”
- Increase in a current liability, results in decrease (-) in “Working Capital”
- Decrease in a current liability, results in increase (+) in “Working Capital”

CHECK YOUR PROGRESS – I

1. What do you understand by the term gross working capital?

2. State the meaning of net working capital.

3. Explain the term fund from operation.

4. What do you understand by ‘sources of funds’?

5. List out various ways of application of fund.

6. Current Assets include

a) Cash and bank balance

b) Machinery

c) Furniture

d) all of above

7. Which of the following is a non-current asset?

a) Debtors

b) prepaid insurance

c) land

d) stock

8. Sale of building results into

a) Source of fund

b) Application of fund

c) No flow of fund

c) Increase in working capital

9. Given – Net profit as per Profit and loss account	50000
Depreciation	10000
Profit on sale of furniture	5000
Loss on sale of machinery	13000

What is the amount of funds from operation?

- a) Rs.50,000
- b) Rs.60000
- c) Rs.65,000
- d) Rs.68000

10. Which of the following is NOT sources of funds?

- a) Long-term borrowing
- b) Issue of debentures at par
- b) Non-Trading income
- d) Purchase of Investments

11. When preliminary expenses are written off, it results in the

- a) External source
- b) application of fund
- c) No flow of fund
- d) Loss

12. For preparing a funds flow statement, unexpired insurance is treated as a

- a) Current asset
- b) Non-Current Asset
- c) Current liability
- d) Non-Current liability

13. An increase in the share premium account is

- a) Application of funds
- b) Source of funds
- c) No flow of funds
- d) Working capital

14. Stock in the beginning results in

- a) Application of funds
- b) Source of funds
- c) No flow of funds
- d) None of these

15. Increase in an asset due to purchase is

- a) Application of funds
- b) Source of funds
- c) No flow of funds
- d) Increase in Working capital

Problem No:1. From the following balance sheets of Block Ltd., on 31st March 2002 and 2003 you are required to prepare.

- a) A schedule of changes in working capital
- b) A fund flow statement.

LIABILITIES	31.3.02 (Rs.)	31.3.03 (Rs.)	ASSETS	31.3.02 (Rs.)	31.3.03 (Rs.)
Share capital	1,00,000	1,00,000	Good will	12,000	12,000
General Reserve	14,000	18,000	Building	40,000	36,000
Profit & Loss A/C	16,000	13,000	Plant	37,000	36,000
Sundry Creditors	8,000	5,400	Investments	10,000	11,000
Bills Payable	1,200	800	Stock	30,000	23,400
Provision for Taxation	16,000	18,000	Bills Receivable	2,000	3,200
Provision for Doubtful Debts	400	600	Debtors	18,000	19,000
			Cast at Bank	6,600	15,200
	1,55,600	1,55,800		1,55,600	1,55,800

The following additional information has also been given:

1. Depreciation charged on Plant was Rs.4,000 and on Building Rs.4,000.
2. Provision for Taxation of Rs.19,000 was made during the year 2002.
3. Interim Dividend of Rs.8,000 was paid during the year 2002.

Solution:

Schedule of Changes in Working Capital

Particulars	31.3.02	31.3.03	Increase	Decrease
Current Assets				
Stock	30,000	23,400		6,600
Bills Receivable	2,000	3,200	1,200	
Debtors	18,000	19,000	1,000	
Cash at Bank	6,600	15,200	8,600	
Current Liabilities				
Sundry Creditors	8,000	5,400	2,600	
Bills Payable	1,200	800	400	
Net Increase in Working Capital				7,200
Total			13,800	13,800

Plant Account

Particulars	Amount	Particulars	Amount
To Balance B/d	37,000	By Depreciation	4,000
To Bank (Purchases)	3,000	By balance C/d	36,000
(Balancing figure)	40,000		40,000

Provisions for Taxation Account

Particulars	Amount	Particulars	Amount
To Bank (Tax Paid) (Balancing Figure)	17,000	By Balance B/d	16,000
To Balance C/d	18,000	By Profit and Loss Account	19,000
	35,000		35,000

Adjusted Profit and Loss Account

Particulars	Amount	Particulars	Amount
To Transfer to General reserve	4,000	By Balance B/d	16,000
To Provision for Taxation	19,000	By Funds from Operations (Balancing Figure)	36,200
To Provision for Doubtful Debts	200		
To Depreciation Written off-Plant	4,000		
To Depreciation written off-building	4,000		
To Interim dividend	8,000		
To Balance C/d	13,000		
	52,200		52,200

Fund Flow Statement

Sources	Amount	Applications	Amount
Fund from Operations	36,200	Tax Paid	17,000
		Interim Dividend Paid	8,000
		Plant Purchased	3,000
		Investment Purchased	1,000
		Net Increase in Working Capital	7,200
	36,200		36,200

Problem No.2: From the following balance sheets of Nagu Ltd., prepare a statement of changes in working capital and funds flow statement.

Capital and Liabilities	31.3.9 9 (Rs.)	31.3.00 (Rs.)	Assets	31.3.99 (Rs.)	31.3.00 (Rs.)
Equity Share capital	3,00,000	4,00,000	Good will	1,00,000	80,000
8% Redeemable preference shares	1,50,000	1,00,000	Land and Buildings	2,00,000	1,70,000
Capital Reserve	--	20,000	Plant and Machinery	80,000	2,00,000
General Reserve	40,000	50,000	Investments	20,000	30,000
Profit and Loss Account	30,000	48,000	Sundry Debtors	1,40,000	1,70,000
Proposed dividends	42,000	50,000	Stock	77,000	1,09,000

Sundry Creditors	25,000	47,000	Bills Receivable	20,000	30,000
Bills Payable	20,000	16,000	Cast at Hand	15,000	10,000
Liability for expenses	30,000	36,000	Cash at Bank	10,000	8,000
Provision for Taxation	40,000	50,000	Preliminary expenses	15,000	10,000
	6,77,000	8,17,000		6,77,000	8,17,000

1. A piece of land has been sold out in 2000 and the profit on sale has been credited to capital reserve;
2. A machine was sold for Rs.10,000. The written down value of the machinery was Rs.12,000. Depreciation of Rs.10,000 was charged on plant account in 2000;
3. The investments are trade investments. Rs.3,000 was received by way of dividends which included Rs.1,000 from pre-acquisition profit. It has been credited to investment account;
4. An interim dividend of Rs.20,000 has been paid in 2000.

Solution:

Schedule of Changes in Working Capital

Particulars	31.3.99	31.3.00	Increase	Decrease
Current Assets				
Sundry Debtors	1,40,000	1,70,00	30,000	
Stock	77,000	1,09,000	32,000	
Bills Receivable	20,000	30,000	10,000	
Cash in Hand	15,000	10,000		5,000
Cash at Bank	10,000	8,000		2,000
Current Liabilities				
Sundry Creditors	25,000	47,000		22,000
Bills Payable	20,000	16,000	4,000	
Liability for Expenses	30,000	36,000		6,000
Net Increase in Working Capital				41,000
Total			76,000	76,000

Workings:

Land Accounts

Particulars	Amount	Particulars	Amount
To Balance B/d	2,00,000	By Cash (Sale of land, balancing figure)	50,000
To Capital reserve (Profit on sale)	20,000	By Balance C/d	1,70,000
	2,20,000		2,20,000

Plant Account

Particulars	Amount	Particulars	Amount
To Balance C/d	80,000	By Cash (Sale of plant)	10,000
To Purchase (balance)	1,42,000	By Profit & Loss A/c (Loss)	2,000
		By Profit & Loss A/c (Depreciation)	10,000
		By Balance c/d (Closing Balance)	2,00,000
	2,22,000		2,22,000

Investment Account

Particulars	Amount	Particulars	Amount
To Balance b/d	20,000	By Cash (dividend received out of pre-acquisition profit)	1,000
To Purchase (balance)	11,000	By balance c/d	30,000
	31,000		31,000

Adjusted Profit and Loss Account

Particulars	Amount	Particulars	Amount
To Good will written off	20,000	By balance b/d	30,000
To Transfer to General reserve	10,000	By fund from operation	1,85,000
To depreciation	10,000		
To provision of taxation	50,000		
Preliminary expenses w/o	5,000		
To dividend provision	50,000		
To interim dividend	20,000		
To Loss on sale of plant	2,000		
To balance c/d	48,000		
	2,15,000		2,15,000

Fund Flow Statement

Sources	Amount	Applications	Amount
Funds from operation	1,85,000	Redemption of preference shares	50,000
Equity share capital	1,00,000	Payment of (last year's proposed) dividend	42,000
Sale of land	50,000	Payment of tax (provision of the last year)	40,000
Dividend on investment (credited to investment account)	1,000	Purchase of plant	1,42,000
Sale of Plant	10,000	Purchase of investment	11,000
		Payment of interim dividend	20,000

		Increase in working capital	41,000
	3,46,000		3,46,000

Problem No.3

Balance Sheets of M/s Laxmi & Sandhi as on 1.1.2000 and 31.12.2001 are as follows.

Balance Sheet

Capital and Liabilities	1.1.2000 0 (Rs.)	31.12.2000 0 (Rs.)	Assets	1.1.2000 (Rs.)	31.12.2000 (Rs.)
Creditors	40,000	44,000	Cash	10,000	7,000
Ms.Sandhi Loan	25,000	--	Debtors	30,000	50,000
Loan from Bank	40,000	50,000	Stock	35,000	25,000
Capital	1,25,000	1,53,000	Machinery	80,000	55,000
			Land	40,000	50,000
			Building	35,000	60,000
	2,30,000	2,47,000		2,30,000	2,47,000

During the year a machine costing Rs.10,000 (accumulated depreciation Rs.3,000) was sold for Rs.5,000. The provision for depreciation against machinery as on 1.1.2000 was Rs.25,000 and 31-12-2000 was Rs.40,000. Net profit for the year 2000 amounted to Rs.45,000. You are required to prepare funds (working capital) flow statement.

Solution:

Schedule of Changes in Working Capital

Particulars	1.1.2000	31.12.2000	Increase	Decrease
Current Assets				
Cash	10,000	7,000		3,000
Debtors	30,000	50,000	20,000	
Stock	35,000	25,000		10,000
Current Liabilities:				
Creditors	40,000	44,000		4,000
Net Increase in Working Capital				3,000
Total			20,000	20,000

Workings**Machinery Account**

Particulars	Amount	Particulars	Amount
To Balance b/d	1,05,000	By Provision for Depreciation (sold Machinery)	3,000
		By Bank	5,000
		By loss on sale of machinery	2,000
		By Balance c/d	95,000
Total	1,05,000	Total	1,05,000

Provision for Depreciation on Machinery

Particulars	Amount	Particulars	Amount
To Machinery a/c	3,000	By Balance b/d	25,000
To Balance c/d	40,000	By Profit and Loss a/c (Depreciation provided during the year – balancing figures)	18,000
Total	43,000	Total	43,000

Fund from Operations

Profit made during the year	45,000
Add Depreciation on Machinery	18,000
Add Loss on Sale of Machinery	2,000

Total 65,000

Fund flow Statement

Sources	Amount	Applications	Amount
Fund from Operation	65,000	Shanthi's Loan Repaid	25,000
Loan from PN bank	10,000	Purchase of Land	10,000
Sale of Plant	5,000	Purchase of Building	25,000
		Partners drawings	17,000*
		Increase in Working Capital	3,000
Total	80,000	Total	80,000

*Note: In the above illustration the opening capital of the partners	Rs.1,25,000
Add current net profit	Rs. 45,000

Closing Capital of the partners should	Rs.1,70,000
Less: Actual Closing Capital of the firm	Rs.1,53,000

The difference between the two is the drawings of the partners	Rs. 17,000

Problem No.4

The following are the summarized balance sheets of Lucky Ltd., on 31st

December, 1999 and 31st December 2000.

Capital and Liabilities	31.12.99 (Rs.)	31.12.00 (Rs.)	Assets	31.12.99 (Rs.)	31.12.00 (Rs.)
Share capital	12,00,00 0	16,00,00 0	Plant & Machinery (at cost)	8,00,000	12,90,00 0
Debentures	4,00,000	6,00,000	Land and Buildings (at cost)	6,00,000	8,00,000
Profit and Loss Account	2,50,000	5,00,000	Stock	6,00,000	7,00,000
Creditors	2,30,000	1,80,000	Bank	40,000	80,000
Provision for bad & doubtful debts	12,000	6,000	Preliminary Expenses	14,000	12,000
Depreciation on land & building	40,000	48,000	Debtors	1,38,000	1,22,000
Depreciation on Plant & Machinery	60,000	70,000			
	21,92,00 0	30,04,00 0		21,92,00 0	30,04,00 0

Additional Information:

- During the year, a part of the machinery, costing Rs.1,40,000 (accumulated depreciation thereon Rs.4,000 was sold for Rs.12,000.).
- Dividend of Rs.1,00,000 was paid during the year.

Ascertain: a) Change in Working capital for 2000.

b) Fund flow statement for 2000.

Schedule of Changes in Working Capital

Particulars	1999	2000	Increase	Decrease
Current Assets				
Stock	6,00,000	7,00,000	1,00,000	
Bank	40,000	80,000	40,000	
Debtors	1,38,000	1,22,000		16,000
Current Liabilities				
Creditors	2,30,000	1,80,000	50,000	
Net increase in working capital				1,74,000
Total			1,90,000	1,90,000

Workings:

Machinery Account

Particulars	Amount	Particulars	Amount
To Balance b/d	8,00,000	By Bank	12,000
To Bank (Purchase of Machinery) – Balancing Figures	6,30,000	By P & L A/c (Loss on Sale)	1,24,000
		By provision for depreciation (on Sold Plant)	4,000
		By Balance C/d	12,90,000
Total	14,30,000	Total	14,30,000

Provision for Depreciation on Plant and Machinery Account

Particulars	Amount	Particulars	Amount
To Plant & Machinery a/c	4,000	By Balance b/d	60,000
To Balance c/d	70,000	By Profit and Loss a/c (Depreciation provided during the year – balancing figures)	14,000
Total	74,000	Total	74,000

Adjusted Profit and Loss Account

Particulars	Amount	Particulars	Amount
To Dividend	1,00,000	By Balance b/d	2,50,000
To Provision for Depreciation:		By Decrease in Provision for Doubtful Debts	6000
Land and Buildings	8,000	Fund from operations (Balancing Figure)	4,92,000
Plant and Machinery	14,000		
To Loss on Sale of	1,24,000		

Machinery			
To Preliminary Expenses written off	2,000		
To Balance c/d	5,00,000		
Total	7,48,000	Total	7,48,000

Fund Flow Statement

Sources	Amount	Applications	Amount
Fund from Operation	4,92,000	Purchase of Plant & Machinery	6,30,000
Issue of Debenture	2,00,000	Purchase of Land & Buildings	2,00,000
Issue of Shares	4,00,000	Payment of Dividend	1,00,000
Sale of Machinery	12,000	Increase in Working Capital	1,74,000
Total	11,04,000	Total	11,04,000

Problem No.5

The Balance sheets of White Co., Ltd., as at the end of 2002 and 2003 are given below:

Capital and Liabilities	31.3.02 (Rs.)	31.3.03 (Rs.)	Assets	31.3.02 (Rs.)	31.3.03 (Rs.)
Share capital	1,00,000	1,50,000	Free hold land	1,00,000	1,00,000
Share Premium	--	5,000	Plant at Cost	1,04,000	1,00,000
General Reserve	50,000	60,000	Furniture a cost	7,000	9,000
Profit & Loss Account	10,000	17,000	Investments at cost	60,000	80,000
16% debenture	70,000	50,000	Debtors	30,000	70,000
Provision for Depreciation Plant	50,000	56,000	Stock	60,000	65,000
Depreciation on Furniture	5,000	6,000	Cash	30,000	45,000
Provision for Taxation	20,000	30,000			
Sundry Creditors	86,000	95,000			
	3,91,000	4,69,000		3,91,000	4,69,000

A plant purchased for Rs.4,000 (depreciation Rs.2,000) was sold cash for Rs.800 on January 31, 2003 and an item of furniture was purchased for Rs.2,000. These

were the only transactions concerning fixed assets during 2003. A dividend of 22 ½ % on original shares was paid.

You are required to prepare a funds flow statement and verify the results by preparing a schedule of changes in working capital.

Solution:

Schedule of Changes in Working Capital

Particulars	2001	2002	Increase	Decrease
Current Assets				
Debtors	30,000	70,000	40,000	
Stock	60,000	65,000	5,000	
Cash	30,000	45,000	15,000	
Current Liabilities				
Sundry Creditors	86,000	95,000		9,000
Net increase in working capital				51,000
Total			60,000	60,000

Workings:

Plant Account

Particulars	Amount	Particulars	Amount
To Balance b/d	1,04,000	By Bank	800
		By P & L A/c (Loss on Sale)	1,200
		By provision for depreciation (on Sold Plant)	2,000
		By Balance c/d	1,00,000
Total	1,04,000	Total	1,04,000

Furniture Account

Particulars	Amount	Particulars	Amount
To Balance b/d	7,000	By Balance c/d	9,000
To Bank (balancing figure)	2,000		
Total	9,000	Total	9,000

Provision for Depreciation on Furniture Account

Particulars	Amount	Particulars	Amount
To Balance c/d	6,000	By Balance b/d	5,000
		By P & L A/c.	1,000
Total	6,000	Total	6,000

Provision for Depreciation on Plant

Particulars	Amount	Particulars	Amount
To Plant A/c (Dep. On plant sold)	2,000	By Balance b/d	50,000
To Balance c/d	56,000	By P & L A/c. (Depreciation charged – depreciation charged during the year)	8,000
Total	58,000	Total	58,000

Adjusted Profit and Loss Account

Particulars	Amount	Particulars	Amount
To Dividend paid	22,500	By Balance b/d	10,000
To Provision for Taxation	30,000	By Fund from Operation (Balance in Figures)	79,700
To Transfer to General Reserve	10,000		
To Depreciation:			
Plant	8,000		
Furniture	1,000		
To Loss on sale of plant	1,200		
To Balance c/d	17,000		
Total	89,700	Total	89,700

Fund flow Statement

Sources	Amount	Applications	Amount
Fund from Operation	79,700	Redemption of Debenture	20,000
Sale of Plant	800	Purchase of furniture	2,000
Share Capital (including premium)	55,000	Dividend paid	22,500
		Tax Paid	20,000
		Investment Purchased	20,000
		Increase in working capital	51,000
Total	1,35,500	Total	1,35,500

Problem No.6

Following are the summarised balance sheets of AMCO as a December 31st, 2000 and 2001:

Liabilities	2000	2001	Assets	2000	2001
Share Capital	2,00,000	2,50,000	Land and Building	2,00,000	1,90,000
General Reserve	50,000	60,000	Machine	1,50,000	1,69,000
Profit and Loss	30,500	30,600	Stock	1,00,000	74,000
Bank Loan (Long-term)	70,000	--	Sundry Debtors	80,000	64,200
Sundry Creditors	1,50,000	1,35,200	Cash	500	600
Provision for Taxation	30,000	35,000	Bank	--	8,000
			Good will	--	5,000
	5,30,500	5,10,800		5,30,500	5,10,800

Additional information supplied: During the year ended December 31st 2001: (a) Dividend of Rs.23,000 was paid; (b) Assets of another company were purchased for a consideration of Rs.50,000 payable in shares. The following assets were purchased: stock Rs.20,000 Machinery Rs.25,000. (c) Machinery was further purchased for Rs.8,000. (d) Depreciation written off machinery Rs.12,000. (e) Income-tax provided during the year Rs.33,000. (f) Loss on sale of machinery Rs.200 was written off to general reserve. You are required to prepare statement of funds flow.

Solution

Schedule of Changes in Working Capital

Particulars	2000	2001	Increase	Decrease
Current Assets				
Stock	1,00,000	74,000		26,000
Debtors	80,000	64,200		15,800
Cash	500	600	100	

Bank	--	8,000	8,000	
Current Liabilities				
Sundry Creditors	1,50,000	1,35,200	14,800	
Net decrease in working capital			18,900	
Total			41,800	41,800

Land and Building Account

Particulars	Amount	Particulars	Amount
To Balance b/d	2,00,000	By Depreciation (Balancing Figure)	10,000
		By Balance c/d	1,90,000
Total	2,00,000	Total	2,00,000

Machinery Account

Particulars	Amount	Particulars	Amount
To Balance b/d	1,50,000	By Depreciation	12,000
To Share Capital (Purchases)	25,000	By General Reserve (Loss on Sale)	200
To Cash Purchases	8,000	By Cash (Sales)	1,800
		By Balance c/d	1,69,000
Total	1,83,000	Total	1,83,000

Share Capital Account

Particulars	Amount	Particulars	Amount
To Closing Balance	2,50,000	By Opening Balance	2,00,000
		By Machinery Purchases	25,000
		By Stock	20,000
		By Good will (Balance Figure)	5,000
Total	2,50,000	Total	2,50,000

Provision for Taxation Account

Particulars	Amount	Particulars	Amount
To Tax Paid (Balancing Figure)	28,000	By Opening balance	30,000
To Closing balance	33,000	By Profit and Loss A/c	33,000
Total	63,000	Total	63,000

General Reserve Account

Particulars	Amount	Particulars	Amount
To Machinery a/c (Loss on sale)	200	By Opening balance	50,000
To Closing balance	60,000	By Profit and Loss a/c (balancing figure)	10,200
Total	60,200	Total	60,200

Adjusted Profit and Loss Account

Particulars	Amount	Particulars	Amount
To General Reserve	10,200	By Opening Balance	30,500
To Income Tax Provisions	33,000	By Fund from Operation	88,300
To Depreciation:			
Building	10,000		
Machinery	12,000		
To Dividend Purposed	23,000		
To Closing Balance	30,600		
Total	1,18,800	Total	1,18,800

Fund flow Statement

Sources	Amount	Applications	Amount
Fund from Operation	88,300	Purchase of machinery for cash	8,000
Issue of Shares (Stock)	20,000	Payment of Bank loan	70,000
Sale of Machinery	1,800	Payment of Tax	28,000
Net Decrease in working capital	18,900	Payment of Dividend	23,000
Total	1,29,000	Total	1,29,000

SUMMARY

The Statement of Changes in Financial Position (SCFP), as a statement of financial analysis, demonstrates changes in funds over a period of time, generally between two consecutive years. The SCFP, based on net working capital concept, is more popularly known as funds-flow statement. According to this basis, only those transactions, which bring about changes in net working capital, are included in the statement while others are excluded. The statement enumerates major sources and uses of working capital.

Major sources of working capital are funds from business operations, non-operating incomes, sale proceeds of fixed assets, raising additional share capital and long-term borrowings. The principal uses of working capital are purchase of fixed assets, repayment of long-term borrowings, redemption of preference shares/debentures, payment of dividends, taxes and so on.

The factors determining working capital are Production Policies, Nature of Business, length of the manufacturing process, credit policy, rapidity of turnover, seasonal fluctuations, fluctuations of supply and so on.

KEY TO CHECK YOUR PROGRESS

6. (a) 7. (c) 8. (a) 9. (d) 10. (d) 11. (c) 12. (a) 13. (b)
14. (c) 15. (a)

MODEL QUESTIONS

1. What are the important sources and modes of application of funds in a modern business firm?
2. What is a "Fund flow statement"?
3. Distinguish between Fund Flow Statement and Balance Sheet.
4. What do you mean by funds from operations? How is it determined?

Ex. No:1

The following schedule shows the balance sheets in condensed form of Ashoka Co., Ltd., at the beginning and end of the year 2001.

Capital and Liabilities	1.1.01 (Rs.)	31.12.01 (Rs.)	Assets	1.1.01 (Rs.)	31.12.01 (Rs.)
Sundry Creditors	1,03,000	96,000	Cash and Bank balances	50,000	40,000
Outstanding Expenses	13,000	22,000	Sundry Debtors	77,000	73,000
15% Debentures	90,000	70,000	Temporary investments	1,10,000	84,000
Depreciation fund	40,000	44,000	Prepaid Expenses	1,000	2,000
Reserve for Contingencies	60,000	50,000	Stock-in-trade	92,000	1,06,000
Profit & Loss Account	16,000	23,000	Land and buildings	1,00,000	1,00,000
Capital	1,80,000	1,80,000	Machinery	72,000	80,000
	5,02,000	4,85,000		5,02,000	4,85,000

The following information concerning the transactions is available:

- i) 10% dividend was paid in cash.
- ii) New Machinery for Rs.20,000 was purchased but old machinery costing Rs.12,000 was sold for Rs.4000, accumulated depreciation was Rs.6000.
- iii) Rs.20,000, 15% debentures were redeemed by purchase from open market @Rs.96.
- iv) Rs.26,000 investments were sold at book value.

You are required to prepare a schedule of changes in working capital and a statement showing the sources and applications of funds.

Ex. No:2

From the following Balance Sheets of Exe Ltd, make out the statement of sources and uses of funds:

LIABILITIES	2000	2001	ASSET	2000	2001
Eq. Share capital	3,00,000	4,00,000	Goodwill	1,15,000	90,000
8%Red. Pref.	1,50,000	1,00,000	Land & building	2,00,000	1,70,000
Shares	40,000	70,000	Plant	80,000	2,00,000
General Reserve	30,000	48,000	Debtors	1,60,000	2,00,000
P & L a/c	42,000	50,000	Stock	77,000	1,09,000
Proposed Dividend	55,000	83,000	Bills receivable	20,000	30,000
Creditors	20,000	16,000	Cash in hand	15,000	10,000
Bills Payable	40,000	50,000	Cash in bank	10,000	8,000
Provision for tax					
Total	6,77,000	8,17,000	Total	6,77,000	8,17,000

Additional Information:

- Depreciation of Rs.10000 and Rs.20000 has been charged on plant and land & buildings respectively in 2000.
- An interim dividend of Rs.20000 has been paid in 2000.
- Rs.35000 income tax was paid during the year 2001.

Ex. No.:3

The summarized Balance Sheet of NVs Shanti Products for the years ended on 31.3.2000 and 31.3.2001 are given below:

(000')					
CAPITAL	31.3.2000	31.3.2001	ASSETS	31.3.2000	31.3.2001
Share capital	500	500	Buildings	180	200
General Reserve	200	220	Plant	210	276
P & L a/c	40	32	Other fixed asst	30	45
Long term loan	---	100	Investments	50	50
Creditors	158	172	Stock	200	190
Provision for tax	45	30	Debtors	170	195
			Cash at bank	103	98
Total	943	1054	Total	943	1054

Prepare a statement of sources and application of funds after taking into consideration the following additional information relating to the year-ended on 31.3.2001.

- Dividend amounting to Rs.30000 was paid during the year.
- Provision for taxation made Rs.12000
- Machinery worth Rs.15000 (book value) was sold at a loss of Rs.3000.

d) Investment costing Rs.10000 was sold for Rs.12000

e) Depreciation provided on assets:

Land and building Rs. 5000

Plant and machinery Rs.20000

Ex. No:4

The following balance sheets have been prepared from the books of Raj Limited as appearing on 31.12.1997 and 31.12.1998:

	1997	1998		1997	1998
Equity Capital	4,00,000	6,00,000	Building	5,70,000	5,00,000
Share premium	1,00,000	1,10,000	Plant and	3,60,000	3,51,000
General reserve	2,00,000	2,20,000	machinery	90,000	81,000
Debenture redemption			Furniture	5,000	8,000
Reserve	1,00,000	1,10,000	Cash in hand	1,55,000	1,45,000
Debentures	3,00,000	2,90,000	Stock	1,80,000	1,60,000
Taxation provision	40,000	35,000	Debtors	4,000	40,000
Secured loan	24,000	30,000	Bills receivable	--	2,10,000
Current liabilities			Investments		
	13,64,000	14,95,000		13,64,000	14,95,000
	0	0		0	0

- During 1998, the company paid 12% dividend on its equity share capital of Rs.4,00,000.
- The shares are Rs.100 each fully paid.
- Taxation provision of 1997 was utilized to the extent of Rs.30000 for income tax paid in 1998.
- Depreciation was charged on building at 5% p.a on plant and machinery at 10% p.a. and on furniture at 10% p.a.
- A building worth Rs.70000 was sold on 1.1.1998 at Rs.60000 and a new building was constructed at a value of Rs.25000 on 31.12.1998.
- A machine was purchased at a cost of Rs.40000 on 1.1.1998 while a machine having a book value of Rs.10000 was sold Rs.20000.

Prepare a statement showing movement in working capital, adjusted profit and loss account and a statement showing the sources and application of funds.

CHAPTER 7 : CASH FLOW STATEMENT

STRUCTURE

	Learning Objectives
7.1	Introduction
7.2	Sources and Applications of Cash
7.3	Preparation of Cash Flow Statement
7.4	Distinguish between Fund Flow and Cash Flow Statements
7.5	Managerial Uses of Cash Flow Statement
Check your Progress	
Summary	
Glossary	
Key to Check your Progress	
Model Questions	

LEARNING OBJECTIVES

After completing this chapter, you should be able to:

- state the meaning of cash flow statement
- analysis how far cash is arising from operating, investing and financing activities
- differentiate between the funds flow statement and cash flow statement
- explain how the cash flow statement is prepared
- recognize why managers should use the cash flow statements

7.1 INTRODUCTION

Cash flow statement provides information about the cash receipts and payments of a firm for a given period. It provides information that compliments the profit and loss account and balance sheet. The information about the cash-flows of a firm is

useful in providing users of financial statements with a basis to assess the ability of an enterprise to generate cash and cash equivalents and the needs of the enterprise to utilise these cash flows.

It also helps management in making plans for the immediate future. A Projected Cash Flow Statement or a Cash Budget will enable the management in ascertaining how much cash will be available to meet obligations to trade creditors, to pay bank loans and to pay dividend to the shareholders. A proper planning of the cash resources will enable the management to have cash available whenever needed and put it to some profitable or productive use in case there is surplus cash available.

The term "Cash" here stands for cash and bank balances. It has already been explained in the previous chapter that the term "funds" in a narrower sense, is also used to denote cash. In such a case, the term "Funds" will exclude from its purview all other current assets and current liabilities and the terms "funds flow statement" and "cash flow statement" will have synonymous meanings. However, for the purpose of this study we are calling this part of the study Cash Flow Analysis and not funds flow analysis.

7.2 SOURCES AND APPLICATIONS OF CASH

The cash flow statement during a period is classified into three main categories of cash inflows and cash outflows:

a) Cash Flow from Financing Activity

Financing activities are activities that result in changes in the size and composition of the owners' capital (including preference share capital in the case of a company) and borrowing of the enterprise. Following are the examples of cash flows arising from financing activities:

- Issue of shares
- Issue of debentures, loan, bonds and other marketable securities
- cash repayments
- payment of dividends

b) Cash Flows from Investing Activities

Investing activities are the acquisition and disposal of long-term assets and other investments not included in cash equivalents. In other words, investing activities include transactions and events that involve in the purchase and sale of long-term productive assets (e.g land, building, plant and machinery etc.,) not held for re-sale and other investments. the following are examples of cash flows arising from investing activities:

- purchase of fixed assets
- disposal of fixed assets
- Acquisition of shares, warrant etc
- cash advance and loans made to third parties
- cash receipts and payments to future contracts

c) Cash Flows from Operating Activities

Operating activities are the principal revenue – producing activities of the enterprise and other activities that are not investing are financing activities. Operating activities include cash effects of those transactions and events that enter into the determination of net profit or loss. Following are examples of cash flows from operating activities:

- cash receipts from the sale of goods and rendering of services.
- cash receipts from royalties, fees commission, and other revenue
- cash payments to employees
- cash receipts and payments of an insurance enterprise for premiums and claims, annuities and other policy benefits
- payments to income tax
- cash receipts and payments relating to future contracts, forward contracts and swap contracts.

CALCULATION OF CASH FROM OPERATION

Funds from Operation (as learnt in the previous chapter)		XXX
Add: Increase in Current Liabilities (excluding bank overdraft)	XX	
Decrease in Current Assets (excluding cash and bank balance)	XX	
Less: Increase in Current Assets (Excluding cash and bank balance)	XX	XX
Decrease in Current Liabilities (excluding bank overdraft)	XX	
Cash from operations		XXX

7.3 PREPARATION OF CASH FLOW STATEMENT

A cash flow statement can be prepared on the same pattern on which a funds flow statement is prepared. The change in the cash position from one period to another is computed by taking into account "Sources" and "Applications" of cash.

Cash Flow Statement of XYZ for the year ending ———

Source/Inflow	Rs.	Application/ Outflow	Rs.
Opening Balances		Opening balances	XX
Cash	XX	Bank overdraft	XX
Bank	XX	Cash outflows	XX
Cash from operating	XX	Redemption of red. pref.	XX
Issue of shares	XX	Shares	XX
Raising of Long term loans	XX	Redemption of debentures	XX
/debentures	XX	Repayment of loans	XX
Sale of fixed assets	XX	Non operating expenses	XX
Sale of investments	XX	Dividend paid	XX
Non-trading receipts	XX	Tax paid	XX
		Closing balances	XX
		Cash	XX
		Bank	
Total	XXXX	Total	XXXX

Note: The cash flow statement can also be presented in the vertical form.

7.4 DISTINGUISH BETWEEN FUND FLOW AND CASH FLOW STATEMENTS

Both funds flow and cash statements flow are used in analysis of past transactions of a business. The difference between these two statements are given below:

- Funds Flow Statement is based on the accrual system. In case of preparation of cash flow statements all transactions effecting the cash or cash equivalents is only taken into consideration.
- Fund flow statement analysis's the sources and application of funds of long-term nature and the net increase or decrease in long-term funds will be reflected on the working capital of the firm. The cash flow statement will only consider the increase or decrease in current assets and current liabilities in calculating the cash flow of funds from operations.
- Funds Flow Analysis is more useful for long range financial planning. Cash flow analysis is more useful for identifying and correcting the current liquidity problems of a firm.
- Funds Flow Analysis is a broader concept, it takes into account both long-term and short-term funds into account in analysis. But cash flow statement only deals with the one of the current assets on balance sheet assets side.
- Funds flow statement tallies the funds generated from various sources with various uses to which they are put. Cash Flow statements start with the opening balance of cash and reach to the closing balance of cash by producing through sources and uses.

7.5 MANAGERIAL USES OF CASH FLOW STATEMENT

- i) Helps in efficient cash management.** One of the most important functions of the management is to manage company's cash resources in such a way that adequate cash is available to meet the liabilities. A projected cash flow statement enables the management to plan and co-ordinate the financial operations of the business efficiently.

- ii) **Helps in internal financial management.** The cash flow analysis helps the management in exploring the possibility of repayment of long term debts which depends upon the availability of cash.
- iii) **Discloses the movement of cash.** The cash flow statement discloses the increase or decrease in cash and the reasons therefor. It helps the finance Manager in explaining how the company is short of cash despite higher profits and vice versa.
- iv) **Discloses success or failure of cash planning.** Comparison of actual and budgeted cash flow statement will disclose the failure or success of the management in managing cash resources and necessary remedial measures can be taken in case of deviations.
- v) **Helps to determine the likely flow of cash.** Projected cash flow statements help the management to determine the likely inflow or outflow of cash from operations and the amount of cash required to be raised from other sources to meet the future needs of the business.
- vi) **Supplemental to fund flow statement.** Cash flow analysis supplements the analysis provided by funds flow statement as cash is a part of the working capital.
- vii) **Better tool of analysis.** For payment of liabilities which are likely to be matured in the near future, cash is more important than the working capital. As such, cash flow statement is certainly a better tool of analysis than funds flow statement for short term analysis.

CHECK YOUR PROGRESS

1. Distinguish between fund from operation and cash from operation.

2. Distinguish between fund flow statement and cash flow statement.

3. Cash from operation is equal to

- | | |
|---|--|
| a) Net profit plus increase in outstanding expenses | b) Net profit plus increase in debtors |
| c) Net profit plus increase in stock | c) Increase in bills receivable |

4. Increase in the amount of debtors results in:

- a) Increase in cash
- b) Decrease in cash
- c) No change in cash
- d) None of these

5. Increase in the amount of bills payable results in:

- a) Increase in cash
- b) Decrease in cash
- c) No change in cash
- d) None of these

6. From the following, which is NOT the internal source of cash?

- a) Depreciation
- b) amortization of tangible assets
- c) Creation of reserves
- d) Issue of shares

7. From the following, which is NOT the external source of cash?

- a) Sale of fixed assets
- b) Short-term borrowing
- c) Depreciation
- d) Issue of shares

8. Preparation of Cash Flow Statement is

- a) Required under Companies Act
- b) Required under Income Tax act
- a) Mandatory
- d) recommendatory

9. Which of the following items result in external source cash flows?

- a) Issue of share
- b) Transfer to general reserve
- c) Goodwill written off
- d) All of the above

10. Which of the following is not a cash inflow?

- a) Purchase of fixed asset
- b) Sale of fixed asset
- c) Issue of debentures
- d) Cash from business operations

11. Which of the following is NOT a cash flow from Investing activities?

- a) Purchase of Fixed Assets
- b) Cash advances to third parties
- c) Cash receipts from contracts
- d) Cash proceeds from issue of shares

12. When there is cash from profit, which of the items are deducted from net profit to arrive at cash from operation

- a) Increase in current assets
- b) Decrease in current assets
- c) Increase in current liabilities
- d) All of the above

Problem No.1

From the following information, calculate cash from operations:

Particulars	2000	2001
P & L a/c	40,000	50,000
Debtors	20,000	26,000
Bills receivable	20,000	12,000
Prepaid Rent	2,000	3,000
Prepaid Insurance	1,000	800
Goodwill	20,000	14,000
Depreciation	32,000	40,000
Creditors	20,000	30,000

Solution:

Statement Showing Cash from Operations

Closing balance of P&L a/c		50000
Add:		
Decrease in Bills Receivable	8000	
Decrease in prepaid Insurance	200	
Increase in Creditors	10000	
Depreciation	8000	
Goodwill written off	6000	32200
Less:		82200
Increase in debtors	6000	
Increase in prepaid rent	1000	
Opening balance of P&L a/c	40000	47000
Cash from operations		35200

Problem No.2

From the following balance sheets of Shangavi Ltd., prepare a Cash Flow Statement.

LIABILITIES	1999	2000	ASSETS	1999	2000
Share Capital	80000	85000	Land	50000	50000
Retained earnings	14500	24500	Plant	24000	34000
Creditors	9000	5000	Debtors	16500	19500
Mortgage loan	----	5000	Stock	9000	7000
			Cash	4000	9000
Total	103500	119500	Total	103500	119500

Solution:**Cash Flow Statement**

Inflow	Rs.	Outflow	Rs.
Opening balance of cash	4000	Purchase of plant	10000
Issue of shares	5000	Increase in debtors	3000
Mortgage loan	5000	Decrease in creditors	4000
Cash trading profit	10000	Closing balance of cash	9000
Decrease in stock	2000		
Total	26000	Total	26000

Note in retained earnings represents cash trading profit.

Problem No.3

From the following balance sheets of D Link Ltd. Make out the statement of sources and uses of cash

Particulars	2000	2001
Liabilities		
Equity share capital	300000	400000
8% redeemable preference share capital	150000	100000
General Reserve	40000	70000
Profit and Loss account	30000	48000
Proposed dividend	42000	50000
Creditors	55000	83000
Bills payable	20000	16000
Provision for taxation	40000	50000
	677000	817000
Assets		
Goodwill	115000	90000
Land and Building	200000	170000
Plant	80000	200000
Debtors	160000	200000
Stock	77000	109000
Bills receivable	20000	30000
Cash in hand	15000	10000
Cash at Bank	10000	8000
Total	677000	817000

Additional information:

- Depreciation of Rs.10000 and Rs.20000 have been charged on plant and land and building respectively in 2001.
- An interim dividend of Rs.20000 has been paid in 2001.
- Rs.35000 income tax was paid during the year 2001.

Solution:**Land and Building Account**

Particulars	Rs.	Particulars	Rs.
To balance b/d	200000	By depreciation	20000
		By Bank (sale of machine)	10000
		By balance c/d	170000
	200000		200000
Plant A/C			
To balance b/d	80000	By depreciation	10000
To bank (Purchases)	130000	By balance c/f	200000
	210000		210000
Provision for taxation a/c			
To bank	35000	By balance b/d	40000
To balance c/d	50000	By profit and loss a/c	45000
	85000		85000

Calculation of Profit Made during the year

Balance as at 31.3.2001 Profit & Loss a/c		48000
Add:		
Appropriation made during the year:		
Interim dividend	20000	
Dividend proposed	50000	
General reserve	30000	
Provision for taxation	45000	145000
Add: Non-Cash items:		
Depreciation on plant	10000	
Depreciation on buildings	20000	
Goodwill written off	25000	55000
Less:		
Balance as at 1.4.2000 Profit & Loss a/c		30000
Funds from operations		218000
Add: Increase in Creditors		28000
		246000
Less:		
Decrease in bills payable	4000	
Increase in debtors	40000	
Increase in stock	32000	
Increase in bills receivable	10000	86000
Cash from operations		160000

Cash Flow Statement for the year ended 31st March, 2001

Cash balance as on 1/4/2000	15000	
Cash in hand	10000	25000
Cash at bank		
Add: sources:	100000	
Issue of share capital	10000	
Sale of land and building	160000	270000
Cash from operations		295000
Total Sources		
Less: Applications:		
Redemption of redeemable preference shares	50000	
Interim dividend paid	20000	
Dividend paid	42000	
Income tax paid	35000	
Plant purchased	130000	277000
Cash balance as on 31.3.2001: cash in hand	10000	
Cash at bank	8000	18000
		295000

Problem No. 5

Following are the summarized balance sheets of Grow Well Ltd., as on 31st March, 2000 and 2001.

LIABILITIES	2000	2001
Liabilities:		
Share capital	200000	250000
General reserve	50000	60000
Profit and loss	30500	30600
Bank loan (long-term)	70000	---
Sundry creditors	150000	135200
Provision for tax	30000	35000
	530500	510800
Assets:		
Land and building	200000	190000
Machinery	150000	169000
Stock	100000	74000
Sundry debtors	80000	64200
Cash	500	800
Bank	--	7800
Goodwill	---	5000
	530500	510800

Additional Information:

During the year ended 31st March 2001;

- i) Dividend of Rs.23000 was paid.
- ii) Assets of another company were purchased for a consideration of Rs.50000 payable in shares. The following assets were purchased;
- iii) Stock Rs.20000; Machinery Rs.25000
- iv) Machinery was further purchased for Rs.8000
- v) Depreciation written off on machinery Rs.12000
- vi) Income tax provided during the year Rs.33000; loss on sale of machinery Rs.200 was written off to general reserve.
- vii) You are required to make the statement of cash flow.

Solutions:**Machinery A/c**

Particulars	Rs.	Particulars	Rs.
To Balance c/d	150000	By Loss on sale of machine	200
To share capital a/c (Purchase by issue of shares)	25000	By depreciation	12000
To Cash (Purchase of machinery)	8000	By cash (sale of machine)	1800
		By cash c/d	16900
			0
	183000		18300
			0
Provision for Taxation A/c			
To bank (tax paid)	28000	By balance b/d	30000
To balance c/d	35000	By P & L a/c(tax provision)	33000
	63000		63000

Calculation of profit made during the year:

Balance as at 31.3.2001		30600
Appropriation made during the year:	23000	
1. Proposed dividend		
2. Transfer on General Reserve		
10000	10200	
Add: Loss on sale of machinery	33000	66000
200		
2. Income tax	12000	
	10000	22000
Add: Non-Cash Items		
1. Depreciation – Machinery		118800
2. Depreciation – Land and building		30500
Less: balance as at 01.04.2000		
Profit made during the year from operations		88300

(Funds from operations)		
Add:		
Decrease in current Assets:		
Decrease in Stock		
26000	46000	
Purchase Stock	<u>15800</u>	<u>61800</u>
20600		150100
Debtors (80000 – 64200)		14800
Less Decrease in current liability creditors		
Cash From Operations		135300

Cash Flow Statement of Growell Ltd., as on 31st March, 2001

Cash in hand and at Bank on 1.4.2000		500
Add: Source of Cash	135300	
Cash from operation	1800	137100
Sale of Machinery		137600
Total Cash available for use		
Less: Uses		
Payment of long term loan	70000	
Purchase of machinery for cash	8000	
Payment of dividend	23000	
Payment of tax	28000	129000
Cash in hand and at Bank as on 31.3.2001		8600

SUMMARY

A cash flow statement is a statement depicting change in cash position from one period to another period. A projected cash flow statement or cash budget will help the management in ascertaining how much cash will be available to meet obligations to trade creditors, to pay bank loans and to pay dividend to the shareholders. A proper planning of the cash resources enables the management to have cash available whenever needed and put it into some profitable or productive use in case there is surplus cash available.

GLOSSARY

Cash

Cash here stands for cash and bank balances.

Cash Flow Statement

A cash flow statement is a statement depicting change in cash position from one period to another period

Amortization

Goodwill, preliminary expenses, etc., when written off against profits, reduce the net profits without affecting the cash balances.

Cash Budget

A statement showing the forecast of cash receipts, cash disbursements, and net cash balance over a period.

Cash Credit

An arrangement whereby the bank allows the borrower to borrow up to a certain limit, the cash credit limit.

Overdraft

Under this arrangement, the borrower is allowed to overdraw on his current account with the banker up to a certain limit during a given period.

KEY TO CHECK YOUR PROGRESS

3 (a) 4. (b) 5. (a) 6. (d) 7. (c) 8. (d) 9. (a) 10. (a) 11. (d) 12. (a)

MODEL QUESTIONS

1. Classify the main categories of cash inflows and cash outflows.
2. What are the limitations of cash flow statements? What are the internal sources of cash?
3. How does Cash Flow Statement differ from Fund Flow Statement? What are their uses?
4. Distinguish between Fund Flow Statement and Cash Flow Statement.

Ex.No:1

Balance Sheet of M/s A and B as on 1st January 1998 and 31st December 1999 was as follows:

	1.1.98	1.1.99		1.1.98	1.1.99
Creditors	80000	88000	Cash	20000	14000
Mrs. A' s Loan	50000	----	Debtors	60000	10000
Loan from Bank	80000	100000	Stock	70000	0
Capital	250000	306000	Machinery	160000	50000
			Land	80000	11000
			Building	70000	0
					10000
					0
					12000
					0
	460000	494000		460000	494000
					0

During the year a machine costing Rs.20000 (accumulated depreciation Rs.6000) was sold for Rs.10000. The provision for depreciation against machinery as on 1st January 1999 was Rs.50000 and on 1st December 1999 Rs.80000. Net profit for the year 1999 amounted to Rs.90000. You are required to prepare a cash flow statement.

Ex.No:2

From the following Balance Sheets of Exe Ltd, make out the Cash Flow Statement :

LIABILITIES	2000	2001	ASSET	2000	2001
Eq. Share capital	300000	400000	Goodwill	115000	90000
8%Red. Pref. Shares	150000	100000	Land & building	200000	170000
General Reserve	40000	70000	Plant	80000	200000
P & L a/c	30000	48000	Debtors	160000	200000
Proposed Dividend	42000	50000	Stock	77000	109000
Creditors	55000	83000	Bills receivable	20000	30000
Bills Payable	20000	16000	Cash in hand	15000	10000
Provision for tax	40000	50000	Cash in bank	10000	8000
Total	677000	817000	Total	677000	817000

Additional information:

- Depreciation of Rs.10000 and Rs.20000 has been charged on plant and land & buildings respectively in 1998.
- An interim dividend of Rs.20000 has been paid in 1987.
- Rs.35000 income tax was paid during the year 1988.

Ex.No:3

The summarized Balance Sheet of NVs Shanti Products for the years ended on 31.3.2000 and on 31.3.2001 are given below:

(000')

CAPITAL	31.3.2000	31.3.2001	ASSETS	31.3.2000	31.3.2002
Share capital	500	500	Buildings	180	200
General Reserve	200	220	Plant	210	276
P & L a/c	40	32	Other fixed asst	30	45
Long term loan	---	100	Investments	50	50
Creditors	158	172	Stock	200	190
Provision for tax	45	30	Debtors	170	195
			Cash at bank	103	98
Total	943	1054	Total	943	1054

Prepare a cash flow statement after considering the following additional information relating to the year-ended 31.3.2001.

- f) Dividend amounting to Rs.30000 was paid during the year.
- g) Provision for taxation made Rs.12000
- h) Machinery worth Rs.15000 (book value) was sold at a loss of Rs.3000.
- i) Investment costing Rs.10000 was sold for Rs.12000
- j) Depreciation provided on assets:

Land and building Rs. 5000

Plant and machinery Rs.20000

Ex.No:4

The following are the particulars of A Ltd., for the year 1990 and 1991:

	2000	2001		2000	2001
Equity Capital	400000	500000	Fixed assets	605000	570000
10% preference capital	200000	--	Debtors	120000	140000
5% debentures	---	100000	Inventory	200000	180000
Capital redemption reserve	--	100000	Cash	90000	60000
Profit and loss a/c	250000	60000	Preliminary expenses	60000	40000
Creditors	150000	140000			
Other liabilities	75000	90000			
	1075000	990000		1075000	990000

The following additional information for the year 2001 is relevant:

- a) Preference shares were redeemed at a premium of 10%
- b) Fixed assets were purchased for Rs.195000

- c) Fixed assets at the book value of Rs.140000 were sold for Rs.80000.
d) Dividend of Rs.40000 on equity shares were paid.

You are required to prepare Cash flow statement.

Ex.No:5

The following balance sheets have been prepared from the books of Paramount limited as appearing on 31.12.1997 and 31.12.1998:

	1997	1998		1997	1998
Equity Capital	400000	600000	Building	570000	500000
Share premium	100000	110000	Plant and	360000	351000
General reserve	200000	220000	machinery	90000	81000
Debenture			Furniture	5000	8000
redemption	100000	110000	Cash in hand	155000	145000
Reserve	300000	290000	Stock	180000	160000
Debentures	40000	35000	Debtors	4000	40000
Taxation provision	200000	100000	Bills receivable	--	210000
Secured loan	24000	30000	Investments		
Current liabilities					
	136400	149500		1364000	1495000
	0	0			

a) During 1998, the company paid 12% dividend on its equity share capital of Rs.4,00,000.

b) The shares are Rs.100 each fully paid.

c) Taxation provision of 1997 was utilized to the extent of Rs.30000 for income tax paid in 1998.

d) Depreciation was charged on building at 5% p.a on plant and machinery at 10% p.a. and on furniture at 10% p.a

e) A building worth Rs.70000 was sold on 1.1.1998 at Rs.60000 and a new building was constructed at a value of Rs.25000 on 31.12.1998.

f) A machine was purchased at a cost of Rs.40000 on 1.1.1998 while a machine having a book value of Rs.10000 was sold Rs.20000.

Prepare a cash flow statement.

CHAPTER 8 MARGINAL COSTING & CVP ANALYSIS

STRUCTURE

8.0	Introduction
8.1	Unit Objectives
8.2	Cost Concept
8.3	Absorption Costing
8.4	Advantages of Absorption Costing
8.5	Limitations of Absorption Costing
8.6	Features of Marginal Costing
8.7	Advantages of Marginal Costing
8.8	Limitations of Marginal Costing
8.9	Process of Marginal Costing
8.10	Basic Marginal Cost Equation
8.11	Marginal Cost Statement
8.12	Profit/Volume Ratio
8.13	Margin of Safety
8.14	Improvement in Margin of Safety
8.15	Angle of Incidence
8.16	Cost – Volume - Profit Analysis (CVP Analysis)
8.17	Marginal Costing And CVP Analysis – An Aid For Managerial Decision Making

8.0 INTRODUCTION

Break-Even Analysis refers to ascertainment of level of operations where total revenue equals to total costs. It is an analysis used to determine the probable profit or loss at any level of operations. Break-even analysis is a method of studying the relationship among sales revenue, variable and fixed cost to determine the level of operation at which all the costs are equal to its sales revenue and it is the no profit no loss situation. This is an important technique used in profit planning and managerial decision-making.

According to ICMA, England, "Marginal cost is the amount, at any given volume of output, by which aggregate costs are changed, if the volume of output is increased or decreased by one unit".

Marginal costing is defined as, the ascertainment of marginal costs and of the effect on profit of changes in volume or type of output by differentiating between fixed and variable costs".

8.1 UNIT OBJECTIVES

After completing this chapter, you should be able to:

- explain the various cost concept
- define absorption costing and marginal costing
- explain how marginal costing technique is used in decision-making.
- state how the selling prices are fixed using marginal costing techniques.
- compute break-even point and understand what it represents
- explain how the margin of safety and operating leverage concepts are used in business.
- discuss the ways in which cost-volume –profit (CVP) analysis can be used by a company

8.2 COST CONCEPT

Some concepts which are used in cost accounting are discussed below:

a) Cost: It is the amount of resources given up in exchange for some goods or services. The resources given up are expressed in monetary terms. Cost is defined as "the amount of expenditure (actual or notional) incurred on or attributable to a given thing or to ascertain the cost of a given thing. The Committee and Cost Terminology of the American Accounting Association has defined cost as "the foregoing, in monetary terms, incurred or potentially to be incurred in the realization of the objective of management which may be manufacturing of a product or rendering of a service".

Thus cost is that which is given or is sacrificed to obtain something. The cost of an article consists of actual outgoings or ascertained charges incurred in its

production and sale. Cost is a generic term and it is always advisable to qualify the word cost to show exactly what it means e.g., prime cost, factory cost, sunk cost etc. Cost is also different from value as cost is measured in terms of money whereas value as cost is measured in terms of money whereas value is measured in terms of usefulness or utility of an article.

The objective for which the costs are computed is also important. For example, if the purpose is to fix selling price, then total cost is considered. For valuation of stock, cost means cost of production only. If the objective is to measure efficiency, cost will have to be compiled differently than if the purpose is to quote or value the stock. So the term cost has different interpretations.

A cost must always be studied with reference to its purpose and conditions. Different cost may be ascertained for different purposes and under different conditions. For the valuation of work-in-progress, factory cost is used but for valuation of finished goods, cost of production is used. If the purpose of the study of cost is the same, different conditions may lead in variation in cost. The cost per unit of a product changes with increase or decrease in volume of output as the amount of fixed expenses to be borne by each unit of output decreases or increases with increase or decrease in units of production.

It is to be noted carefully that there is no such thing as an exact cost or true cost as no figure of cost is true in all circumstances and for all purposes. True cost can be only up to the stage of prime cost. But as soon as overheads are included in total cost on estimated basis, the total cost becomes estimated cost, which can be used to obtain a reasonable degree of accuracy.

b) Expense: Expenses are costs which have been applied against revenue of particular accounting period in accordance with the principle of matching cost to revenue e.g., cost of good-sold, office salaries of the period in which they are incurred.

c) Loss: It represents diminution in ownerships equity other than from withdrawal of capital for which no compensating value has been received e.g., destruction of property by fire.

Thus the central idea of the cost concept is that of giving up parting with or sacrificing something or value to acquire some other thing or value; expense

refer to that portion of such sacrifices which are assigned to a particular accounting period. Loss for the sake of, and accompanied by, the securing of some other value.

d) Cost Centre: A cost centre is the smallest segment of activity or area or responsibility for which costs are accumulated. Typically cost centres are departments but in some instances, a department may contain several cost centres. These cost centres are the departments or sub-departments of an organisation with reference to which cost is collected for cost ascertainment and cost control. For example, although an assembly department may be supervised by one foreman, it may contain several assembly lines. Sometimes each assembly line is regarded as a separate cost centre with its own assistant foreman. A cost centre can be a location, i.e., an area such as department, store yard or sales area or an item of equipment, e.g., lathe machine, delivery vehicle or a person, e.g., salesman, foreman.

The determination of a suitable cost centre is very important for ascertainment and control of cost. The manager in-charge of a cost centre is held responsible for control of cost of his cost centre. It enables the accumulation of all such costs at one place for which a common base of recovery may be used.

Types of Cost Centres: Cost centres may be classified as under:

- i) *Personal and impersonal cost centres.* Personal cost centre is one which consists of person or a group of persons. On the other hand, impersonal cost centre consists of a machine, a department of plant.
- ii) *Operation and Process Cost Centres.* Operation cost centre consists of those persons and/or machines carrying out the same kind of operation. On the other hand a centre, which has a continuous sequence of operations is called process cost centre.
- iii) *Product and Service Cost Centres.* Product centre refers to a centre through which a product passes and generally corresponds to a product department. In such centres, raw materials are converted into finished goods. Service centre is department or centre, which incurs direct and indirect costs but does not work directly on products. Maintenance department and general factory office are examples of such centres. Such centres are ancillary and render service to

production centres to enable them to carry out the work of production smoothly. The number of cost centres to vary from organization to organization. In engineering industry, the cost centres may be (i) Machine shop, (ii) Welding shop, (iii) Assembly shop, (iv) Maintenance department (v) General administrative department; (i) to (iii) centres are production centres whereas (iv) and (v) centres are service cost centres.

(e) Profit Centre: A profit centre is that segment of activity of a business, which is responsible for both revenue and expenses and discloses the profit of a particular segment of activity. Profit centres are created to delegate responsibility to individuals and measure their performance. Profit centre is different from cost centre. The following are the main points of difference between a cost centre and profit centre.

i) Cost Centre is the Smallest Unit of Activity or area of responsibility for which costs are collected whereas a profit centre is that segment of activity of a business, which is responsible for both revenue and expenses.

ii) Cost centres are created for accounting conveniences of costs and their control whereas a profit centre is created because of decentralization of operations i.e., to delegate responsibility to individuals who have greater knowledge of local conditions etc.

iii) Cost centres are not autonomous whereas profit centres are autonomous.

iv) A cost centre does not have target costs but efforts are made to minimize costs, but each profit centre has a profit target and enjoys authority to adopt such policies as are necessary to achieve its targets.

v) There may be a number of cost centres in a profit centre as production or service cost centres or personal or impersonal but a profit centre may be a subsidiary company within a group or division in a company.

The selection of suitable cost centres or cost units for which costs are to be ascertained in an undertaking depends upon the organization of the factory; condition of incidence of cost; requirements of costing; i.e., suitability of the unit or cost centre for cost purpose; availability of information; management policy regarding making a particular choice from several alternatives.

f) Cost Driver: A cost driver is any factor that influences costs. A change in the cost driver will lead to a change in the total cost of a related cost object. Examples of cost drivers are; number of units produced, number of set ups, number of items distributed, number of customers served, number of advertisements, number of sales personnel, number of products produced etc. Any change made in any of the cost drivers will cause a change in the total cost. It is for the management to see whether any change in any cost driver is to be made or not keeping in view the cost benefit analysis of the change in the cost driver.

g) Conversion Cost: is the sum of direct wages, direct expenses and overhead costs of converting raw material from one stage of production to the next. In other words, conversion costs is works minus the cost of direct materials.

h) Contribution Margin: This is the excess of sales price over variable costs. This can be expressed in total or ratio of sales or percentage of sales.

i) Carrying Cost: Carrying costs, also known as holding costs, are basically the costs incurred on the maintenance of inventory and include cost of the money locked up in the inventory, inventory obsolescence, storage space rent and cost of stores operation.

j) Out-of-Stock Cost: This cost takes place when a stock shortage occurs and includes loss of sales, loss of goodwill on account of disgruntled customers and employees' ill will and cost of idle machines.

k) Ordering Cost: These costs are incurred each time an order for the purchase of material is placed and are expressed as rupee cost per order and include the cost of getting an item into the firm's inventory.

l) Development Cost: It is the cost of the process which begins with the implementation of the decision to produce a new or improved method and ends with the commencement of formal production of the product by that method.

m) Policy Cost: It is the cost, which is in addition to normal requirement, incurred in accordance with the policy of an undertaking.

n) Discretionary Costs: Discretionary costs, also known as managed costs or programmed costs, include fixed costs that arise from periodic appropriate decision that directly reflected top management policies.

o) Idle Facilities Cost: It is the cost of abnormal idleness of fixed assets or available services.

p) Expired Cost: It is the cost, which is related to the current period as an expense or loss.

q) Incremental Revenue: Incremental revenue reflects the difference in revenue between two alternatives. While making an assessment of profitability of a proposed alternative, incremental revenues are compared with incremental costs.

r) Added Value. It is the change in market value resulting from an alteration in the form, location or availability of a product or service excluding the cost of bought-out materials or services. Unlike conversion cost it includes profit.

s) Urgent Costs: These costs are to be incurred immediately in order to avoid the hampering of production line. These are absolutely essential and their shifting to future period will have adverse effect on the efficiency of operation in hand.

) Postponable Costs: Such costs can be postponed or shifted to the future period generally without any effect on the efficiency of current operations. Such cost is only a deferment of cost and not avoiding altogether.

8.3 ABSORPTION COSTING

Absorption costing is a principle whereby fixed cost as well as variable costs are allotted to cost units and total overheads is absorbed according to activity level. The term may be applied where

a) production cost only

b) costs of all functions.

It is the practice of charging all costs, both variable and fixed, and both direct and indirect to operations, products or processes. Conceptually, absorption costing is a simple and fundamental method of ascertaining the cost of a product or service.

Absorption costing is familiar, since many firms still follow the approach for pricing decisions in terms of adding something on a total costs. It is the oldest and widely used system of cost accounting in operation. Absorbed cost is made up of direct costs plus overhead costs the latter having been allotted to cost units by means of overheads absorption rates. Absorption costing is still in practice, in

fact, that the accounting standards on stocks and work-in-progress recommends that they be valued at that cost which includes production overheads.

8.4 ADVANTAGES OF ABSORPTION COSTING

The advantages from adaptation of absorption costing methods are as follows:

- Absorption costing confirms with the *accrual concept* by matching costs with revenue for a particular accounting period.
- Stock *valuation complies* with the accounting standards, and fixed production costs are absorbed into stocks.
- It *avoids separation* of costs into fixed and variable elements, which is not easily and accurately achieved.
- The *analysis of under/over absorbed overheads* reveals any inefficient utilisation of production resources.
- The apportionment and allocation of fixed production overheads to cost centres (e.g. departments), makes managers more aware of the costs and services provided.
- *Cost plus pricing* under absorption costing ensures that all costs are covered. Pricing at the margin may, in the long run, result in contribution failing to cover the fixed costs. It is important in absorption costing that sales are equal to or exceed the budgeted level of activity otherwise fixed costs will be under absorbed.

8.5 LIMITATIONS OF ABSORPTION COSTING

Absorption costing suffers from following limitations:

- This method employs highly *arbitrary way of apportionment of overheads*, which reduces the practical utility of cost data for control purposes.
- In this method all fixed costs are not charged against the revenue of the year in which they are incurred. It is an unsound practice.
- Assigning product cost with reasonable share of fixed overhead obscures cost-volume-profit relationship.
- Behavioural pattern of costs is not given importance.

- In reporting enterprise results, the profit of a particular period will be affected by the amount of overheads absorbed into closing inventories or work-in-progress of finished stock are charged against the period when opening inventories are sold.
- Absorption costing produces a means of determining selling prices, but in most of the cases accuracy cannot be achieved due to the nature of overheads included in the calculations.
- The complaint is sometimes made that absorption costing often deals only with production costs and ignores selling and administration costs.
- The decision-maker needs to know the costs that will vary as a result of his decision, and the costs that will remain unchanged. Absorption costing does not provide a convenient basis for making such calculations. Its main purpose is to provide cost information for stock valuation and the measurement of reported profits.

8.6 FEATURES OF MARGINAL COSTING

- i) All costs are classified into two – fixed and variable
- ii) Only the variable costs (marginal costs) are treated as their cost of the product
- iii) The stock of finished goods and work-in-progress are valued at marginal cost only
- iv) Fixed costs are charged against the contribution earned during the period
- v) Prices are based on marginal cost plus contribution. Contribution is the difference between selling price and variable cost.

8.7 ADVANTAGES OF MARGINAL COSTING

1. **How much to Produce:** The level of output, which is most profitable for a running concern, can be determined. The production, capacity therefore, can be utilized to the maximum possible extent.

2. **What to Produce:** The manufacture of which product should be undertaken can be decided after comparing the profitability results of different products. Certain products or activities may turn to be unprofitable with the passage of time. Selection of orders and products depends on their profitability and sales effort can be properly directed.
3. **Whether to Produce:** The decision whether a particular product should be manufactured in the factory or bought from outside source can be taken by comparing the price at which it can be had from outside and the marginal cost of producing that article in the factory.
4. **How to Produce:**
 - a) **Method of Manufacture:** When a particular product can be manufactured by two or more methods, the ascertainment of marginal cost of manufacturing the product under each method shall be helpful in deciding as to which method to be compared for its manufacture.
 - b) **Hand or Machine Method:** The problem of employing machine or to produce entirely by hand labour can be solved with the help of marginal costing technique.
5. **At What Cost to Produce**
 - a) **Efficiency and Economy of Plants:** The marginal cost indicates the efficiency and economy of different plants over different ranges of products, volume and output.
 - b) **No-profit – No-loss Point:** With the help of the technique of break-even charts involved under marginal costing system, the point of no-profit no-loss can be reverted and information can be presented to management so as to facilitate comparison.
 - c) **Lease or Ownership of Plant:** A plant or an asset may be taken on lease or may be owned. The cost of lease and ownership are studied and the better alternative is adopted after judging and assessing the minimum sacrifice and maximum differential gain through the technique of marginal costing.

- d) **Cost Control:** For the purpose of control also. Financial results presented through marginal costing technique are useful. Cost control can be affected by comparing fixed cost and variable costs with budgeted costs.
- e) **Inventory Valuation:** Inventory valuation becomes more realistic when it is based on marginal cost.

Thus, we see that the technique of marginal costing is of immense value for managerial decisions.

8.8 LIMITATIONS OF MARGINAL COSTING

- 1) **Classification into Fixed and Variable Elements – a Difficult Task:** It is a tough job to analyze cost under “fixed” and “variable” elements, since the nature of cost is not certain in some cases. Certain costs may be partly fixed and partly variable and the division of such costs into fixed and variable parts separately is based on assumptions and facts.
- 2) **Faulty Decisions:** If the fixed overheads are not taken into consideration, the management’s decision regarding price fixing, manufacturing the product, etc, may prove to be faulty and deceptive. Marginal costs of different product may be the same; still the manufacture of a particular product may not be profitable on account of heavy fixed costs.
- 3) **Difficult in Application:** The application of marginal costing technique is difficult in most of the concerns. It cannot be easily applied in job costing.
- 4) **Under or Over Recovery of Overhead:** Variable overheads are estimated and therefore its absorption, not being based on actual, any result in under or over-recovery of overheads.
- 5) **Better Technique Available:** The techniques of budgetary control and standard costing serve the purpose better than marginal costing technique. Through variance analysis, the impact on profitability due to changes in volume and efficiency can be studied and hence this technique is not required.

Though the technique of marginal costing suffers from certain limitations, it is regarded as one of the most important technique of analysis useful for management and business decisions.

CHECK YOUR PROGRESS – I

1. State the meaning of marginal costing.

2. Difference between marginal costing and absorption costing.

3. Contribution margin is also known as

a) Marginal Income

b) Gross Income

a) Operating Income

d) Net Income

4. Period cost means

a) Prime cost

b) Variable cost

c) Fixed cost

d) Semi-variable cost

5. Profit volume ratio indicates the relationship between

a) Profit and sales

b) Variable cost and sales

c) Fixed cost and sales

d) Contribution and sales

6. At a break even point the total cost is equal to

a) Contribution

b) Sales

c) Profit

d) Fixed cost

7. At the break even point the contribution is equal to

a) Sales

b) Variable cost

c) Fixed cost

d) Profit

8.9 PROCESS OF MARGINAL COSTING

Under Marginal Costing, the difference between sales and marginal cost of sales is found out. This difference is technically called contribution. Contribution provides for fixed cost and profit. Excess of contribution over fixed cost is profit or net marginal. Emphasis remains here on increasing total contribution.

a) Variable Cost

Variable Cost is that part of total cost, which changes directly in proportion with volume. Total variable cost changes with change in volume of output. Increases in output will leads to increase in total variable cost and decrease in output will leads to reduction in total variable cost.

b) Fixed Cost

It represents the cost which is incurred for a period, and which, within certain output and turnover limits tends to be unaffected by fluctuations in the levels of activity (output or turnover). Examples are rent, rates, insurance and executive salaries.

c) Contribution

Contribution is the difference between sales and variable costs and it contributes towards fixed cost and profit. It helps in sales and pricing policies and measuring the profitability of different proposals. Contribution is a sure test to decide whether a product is worthwhile to be continued among different products.

$$\text{Contribution} = \text{Sales} - \text{Variable Cost}$$

$$\text{Contribution} = \text{Fixed cost} + \text{Profit}$$

d) Break-Even Point.

Break-even analysis is a logical extension of marginal costing. It is based on the same principles of classifying the operating expenses into fixed and variable. Now a day it has become a powerful instrument in the hands of policy makers to maximize profits.

There may be change in the level of production due to many reasons, such as competition, introduction of a new product, trade depression or boom, increased demand for the products, scarce resources, change in the selling prices of products, etc. In such cases management must study the effect on profit on account of the changing levels of production. A number of techniques can be used as an aid to management in this respect. One such technique is the break-even analysis.

The term 'break even analysis' is interpreted in the narrower as well as broader sense. Used in its narrower sense, it is concerned with finding out the break-even point, i.e., level of activity where the total cost equals total selling price. Used in its broader sense, it means that system of analysis, which determines the probable profit at any level of production. The break-even analysis

establishes the relationship of costs, volume and profit; so this analysis is also known as 'Cost Volume Profit Analysis'.

Objectives of Cost Volume Profit Analysis

There exists close relationship between the cost volume profits. If volume is increased, the cost per unit will decrease and profit pr unit will increase. Thus there is direct relation between volume and profit but inverse relation between the volume and cost. Analysis of this relationship has become an interesting and useful for the cost and management accountant. This analysis may be applied for profit-planning, cost control, evaluation of performance and decision-making. The main objectives of such analysis are given below:

(i) This analysis helps to forecast profit fairly accurately as it is essential to know the relationship between profits and costs on one hand and volume on the other.

(ii) This analysis is useful in setting up flexible budgets, which indicates costs at various levels of activity. We know that sales and variable costs tend to vary with the volume of output. It is necessary to budget the volume first for establishing budgets for sales and variable costs.

(iii) This analysis assists in evaluation of performance for the purpose of control. In order to review profits achieved and costs incurred, it is necessary to evaluate the effects on costs of changes in volume.

(iv) This analysis also assists in formulating price policies by showing the effect of different price structures on costs and profits. We are aware that pricing plays an important part in stabilizing and fixing up volumes especially in depression period.

(v) This analysis helps to know the amount of overhead costs to be charged to the products cost at various levels of operation, as we know that pre-determined overhead rates are related to a selected volume of production.

The study of break-even analysis can be made by (i) mathematical relationship of cost, volume and profit and (ii) by preparing break-even charts.

Break-Even Chart

The break-even point can be easily illustrated by means of a chart. The break-even chart is only a primary form of profit graph. It is a useful device for supplying information to the management on the effects of changes in costs, volume and revenue.

A break-even chart can be constructed only when sufficient at the time of data collection regarding the selling price, sales volume; variable cost per unit and fixed costs are available. Let us now construct a break-even chart on the basis of the following information (imaginary)

Selling price = Rs.4 per unit

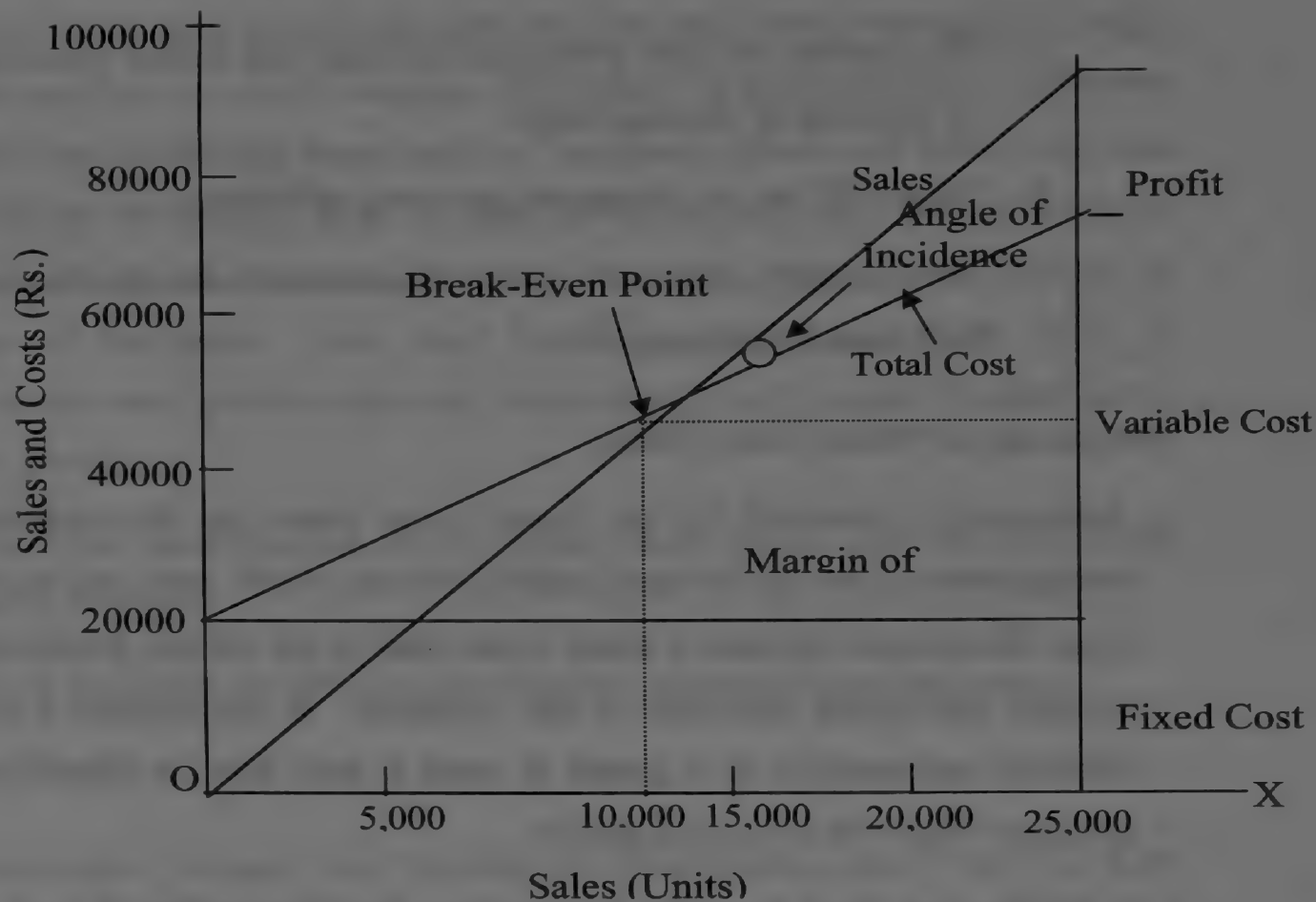
Variable cost = Rs.2 per unit

Fixed costs = Rs.20,000

Sales volume = 25,000 units

With the help of above data, we can construct the following table and the chart.

1 Sales Units	2 Fixed Cost	3 Variable Cost (Rs.2 p.u.)	4 Total Cost	5 Sales Value (Rs.4 p.u)
5,000	20,000	10,000	30,000	20,000
10,000	20,000	20,000	40,000	40,000
15,000	20,000	30,000	50,000	60,000
20,000	20,000	40,000	60,000	80,000
25,000	20,000	50,000	70,000	1,00,000



Note:

Break-even

When 10,000 Units are produced and sold, the total cost of production and total revenue are just equal (Rs.40,000). This stage of no loss and no profit is called "Break-even Sales". This break even point is depicted in the chart both in terms of quantity (10,000 units) and value (Rs.40,000).

Assumptions Underlying Break Even Chart

1. All costs can be separated into fixed and variable costs.
2. Fixed costs will remain constant and will not change with the change in level of output.
3. Variable costs will fluctuate in the same proportion in which the volume of output varies. In other words, prices of variable cost factors i.e., wage rates, price of material etc. will remain unchanged.
4. Selling price will remain constant even though there may be competition or change in volume of production.

5. The number of units produced and sold will be the same so that there is no opening or closing stock.
6. There will be no change in operating efficiency.
7. There is only one product or in the case of many products, product mix will remain unchanged.

Advantages of Break Even Charts

1. Information provided by the break even chart can be understood by the management more easily than contained in the Profit and Loss Account and the Cost Statements because a break even chart is the simple presentation of cost, volume and profit structure of the company. It summarises a great mass of detailed information in a graph in such a way that its significance may be grasped even with a cursory glance.
2. A break-even chart is useful for studying the relationship of cost, volume and profit. The chart is very useful for taking managerial decisions because it shows the effect on profits of changes in fixed costs, variable costs, selling price and volume of sales.
3. The chart is very useful for forecasting costs and profits at various volumes of sales.
4. A break-even chart is a tool for cost control because it shows the relative importance of the fixed costs and the variable costs.
5. Profitability of various products can be studied with the help of these charts and a most profitable product mix can be adopted. Profits at different levels of activity can also be ascertained.
6. The profit potentialities can be best judged a study of the position of the break-even point and the angle of incidence in the break-even chart. Low break-even point and large angle of incidence in the break even chart indicate that fixed costs are low and margin of safety is high. It is a sign of financial stability. In such a case, some monopolistic conditions prevail and high profits are earned over a large range of production activity. Low break-even point and small

angle of incidence show that fixed costs are low and margin of safety is high, but rate of profit is not high because of absence of monopolistic conditions. High break-even point and large angle of incidence show that fixed costs are high and margin of safety is low. A small fall in volume may put the business into losses and a small increase in volume may give a high profit because of large angle of incidence. Last, high break-even point and small angle of incidence is the worst position because it indicates a low margin of safety and a low rate of profit.

7. It is helpful in the determination of sale price, which would give desired profits or a Break Even Point.
8. It is helpful in knowing the effect of increase or reduction in selling price.

Limitations

1. A break-even chart is based on a number of assumptions, which may not hold well. Fixed costs vary beyond a certain level of output. Variable costs do not vary proportionately if the law of diminishing or increasing returns is applicable in the business. Sales revenues do not vary proportionately with changes in volume of sales due to reduction in selling price as a result of competition or increased production.

In the break-even chart, we have seen that the total cost line and the sales line look straight lines. This is possible only with a number of assumptions. But, in practice, the total cost line and the sales line are not straight lines because the assumptions do not hold good. Thus, there might be several break-even points at different levels of activity.

2. A limited amount of information can be shown, in a break-even chart. A number of charts will have to be drawn up to study the effects of changes in fixed costs, variable costs and selling prices.

3. The effect of various product mixes on profits cannot be studied from a single break-even chart.

4. A break-even chart does not take into consideration capital employed, which is a very important factor in taking managerial decisions. Therefore, managerial decisions on the basis of break-even chart may not be reliable.

In spite of the above limitations, the break-even chart is a useful management device for analyzing the problems, if it is constructed and used by those who fully understand its limitations.

Profit-Volume Graph

Profit-volume graph is a simplified form of a break-even chart and is an improvement over the break-even chart as it clearly shows the relationship of profit to volume or sales. This graph suffers from the same limitations with which break even chart suffers. It is possible to construct a P/V graph for any at the time of data collection relating to a business from which a break-even chart can be drawn. Construction of this graph is relatively simple and the procedure of construction is as follows:

- (1) A scale for sales on horizontal axis is selected and other scale for profits and fixed cost or loss on the vertical axis is selected. The area below the horizontal axis is the 'loss area' and that above it is the 'profit area'.
- (2) Points of profits of corresponding sales are plotted and joined. The resultant line is the profit/loss line.

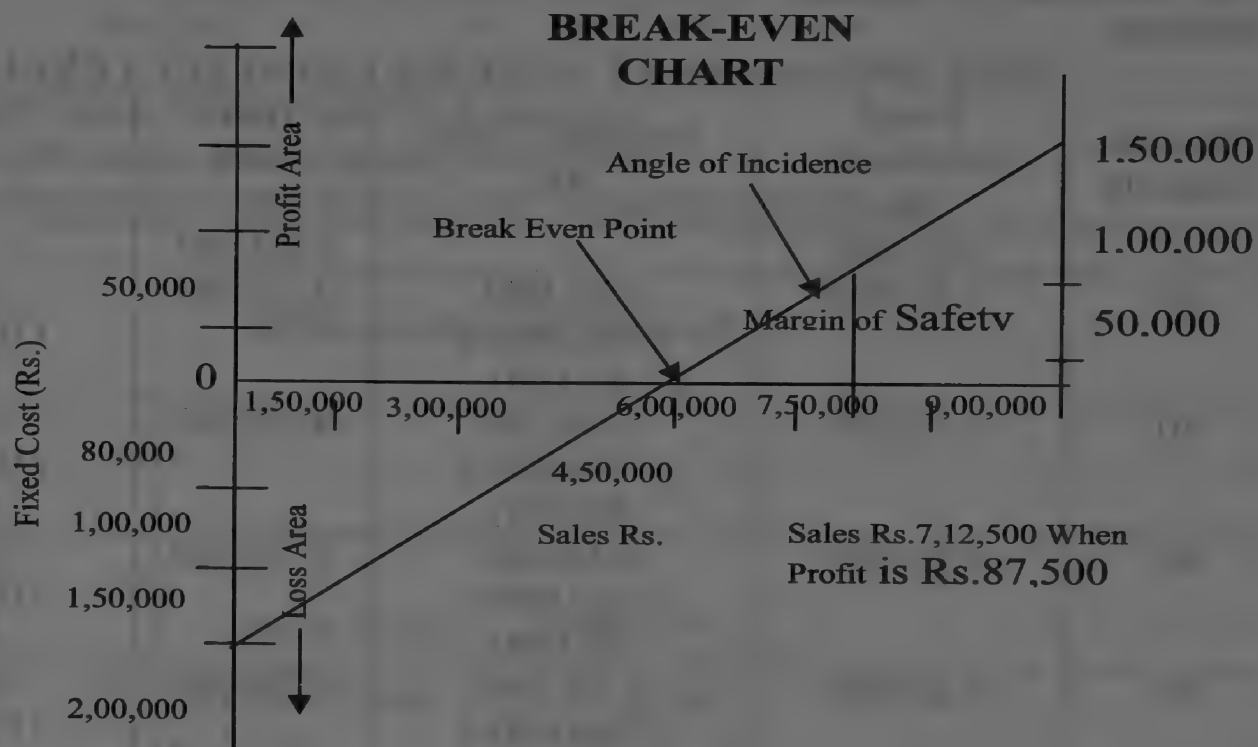
Problem No: 1

Prepare a P/V graph from the following data:

	Rs.
Units produced	= 60,000
Selling price per unit	= 15
Variable cost per unit	= 10
Fixed costs	= 1,50,000

Show the expected sales on the graph when the profit to be earned is Rs.87,500

Solution:



Arithmetical Verification

$$\text{Sales (in units)} = \frac{\text{Fixed Expenses} + \text{Profit}}{\text{Contribution per unit}}$$

$$\text{Sales (in units)} = \frac{1,50,000 + 87,500}{5} = \frac{2,37,500}{5} = 47,500 \text{ units}$$

∴ Sales = 47,500 units @ Rs.15 = Rs.7,12,500.

Problem No. 2:

The following figures relate to one year's working at 100 per cent capacity level in a manufacturing business:

	Rs.
Fixed overhead	1,20,000
Variable overhead	2,00,000
Direct wages	1,50,000
Direct materials	4,10,000
Sales	10,00,000

Represent the above figures on a break-even chart and determine from the chart the break-even point. Verify your result by calculations.

Solution;

COST AND SALES AT VARIOUS CAPACITY LEVELS

Per cent Capacity	Fixed overheads Rs.	Variable Costs Rs.	Total Costs Rs.	Sales Rs.
--	1,20,000	--	1,20,000	--
20	1,20,000	1,52,000 (7,60,000 x 20/100)	2,72,000	2,00,000 (10,00,000 x 20/100)
40	1,20,000	3,04,000 (7,60,000 x 40/100)	4,24,000	4,00,000 (10,00,000 x 40/100)
60	1,20,000	4,56,000 (7,60,000 x 60/100)	5,76,000	6,00,000 (10,00,000 x 60/100)
80	1,20,000	6,08,000 (7,60,000 x 80/100)	7,28,000	8,00,000 (10,00,000 x 80/100)
100	1,20,000	7,60,000 (Given)	8,80,000	10,00,000 (Given)

Arithmetical Verification

Total Variable Cost: Rs.

Direct Materials

4,10,000

Direct Wages

1,50,000

Variable Overhead

2,00,000

Marginal Cost

7,60,000

Contribution = Sales - Marginal Cost
= Rs.10,00,000 - Rs.7,60,000 = Rs.2,40,000

P/V Ratio = $\frac{\text{Contribution}}{\text{Sales}}$
= $\frac{2,40,000}{10,00,000} = \frac{24}{100}$ or 24%

Break Even Point = $\frac{\text{Fixed Expenses}}{\text{P/V Ratio}}$

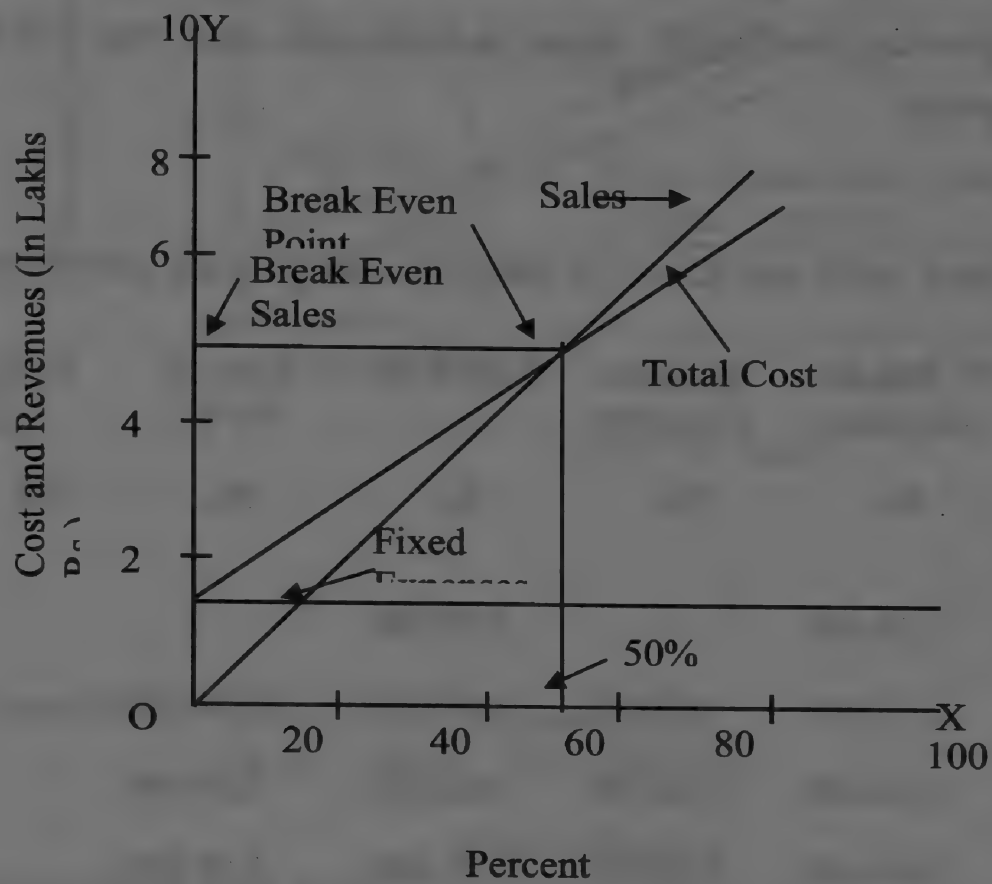
$$= \frac{1,20,000}{24 / 100} = 1,24,000 \times \frac{100}{24} = \text{Rs.}5,00,000$$

At Rs.10,00,000 sales, 100% capacity is reached.

∴ At Rs.5,00,000 sales, 50% capacity is reached.

Hence, break-even point is reached at a 50% capacity utilisation.

BREAK-EVEN CHART



Study -Instructional
Manual

Problem No.3:

You are given the following data for the year 2004 for a factory:

Output	40,000 units
Fixed Expenses	Rs.2,00,000
Variable Expenses per unit	Rs.10
Selling price per unit	Rs.20

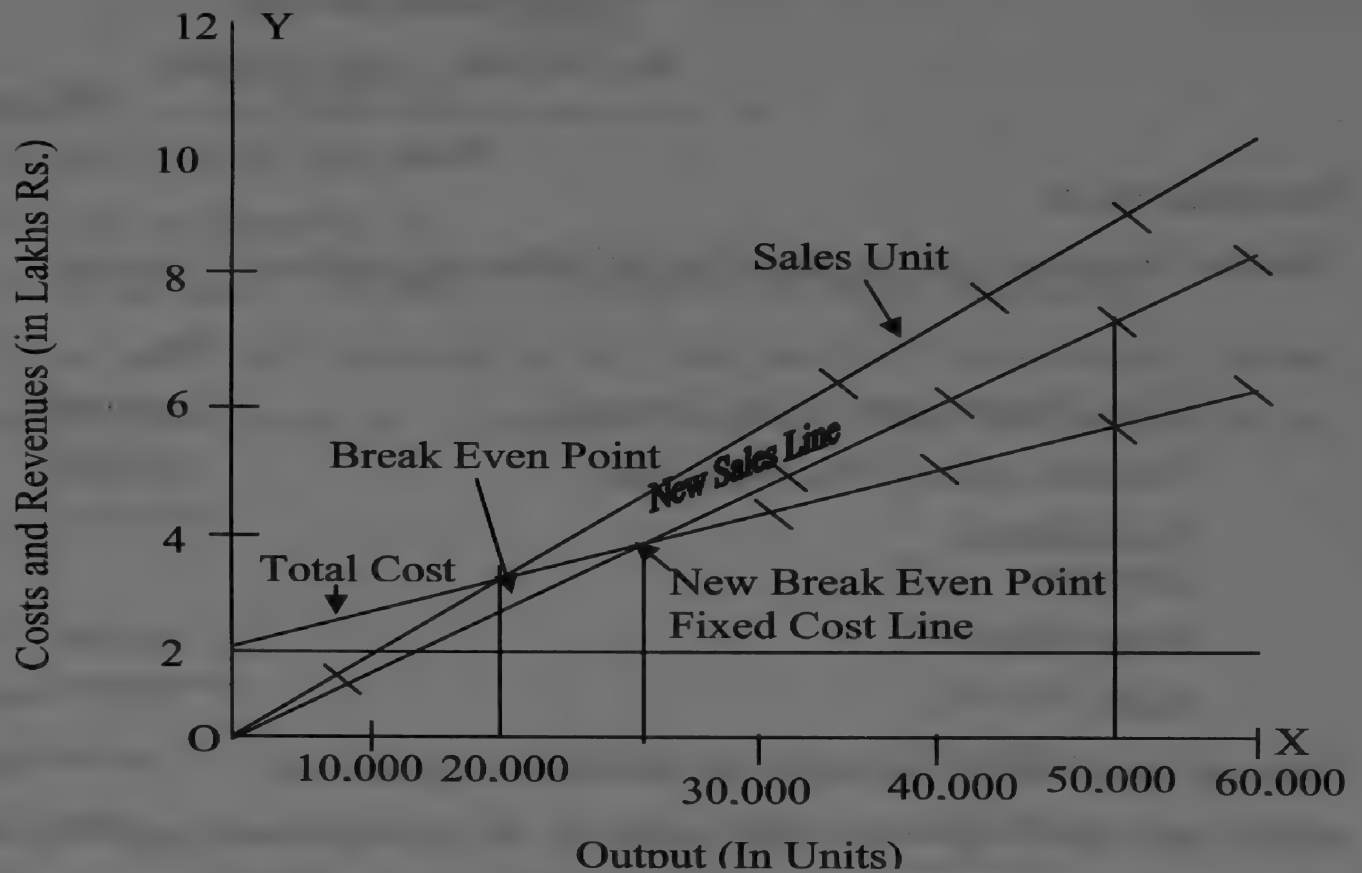
Draw a break-even chart showing the break-even point.

How many units must be produced and sold if the selling price is reduced by 10% in order to give the same profit? Show by break-even chart what will be the new break-even point?

Solution:**COST AND SALES AT VARIOUS LEVELS OF OUTPUT**

Output (units)	Fixed Expenses	Variable Expenses	Total Cost	Sales @ Rs.20	Proposed Sales @ Rs.18
	Rs.	Rs.	Rs.	Rs.	(20 – 10/100 x 20)
0	2,00,000	--	2,00,000	--	--
10,000	2,00,000	1,00,000	3,00,000	2,00,000	1,80,000
20,000	2,00,000	2,00,000	4,00,000	4,00,000	3,60,000
30,000	2,00,000	3,00,000	5,00,000	6,00,000	5,40,000
40,000	2,00,000	4,00,000	6,00,000	8,00,000	7,20,000
50,000	2,00,000	5,00,000	7,00,000	10,00,000	9,00,000
60,000	2,00,000	6,00,000	8,00,000	12,00,000	10,80,000

BREAK-EVEN CHART



$$\begin{aligned} \text{Contribution} &= \text{Selling Price} - \text{Variable Cost} \\ &= \text{Rs.20} - \text{Rs.10} = \text{Rs.10 per unit} \end{aligned}$$

$$\begin{aligned} \text{Present break even point} &= \frac{\text{Fixed Expenses}}{\text{Contribution per unit}} \end{aligned}$$

$$\begin{aligned} \text{Present Profit} &= \text{Total Contribution} - \text{Fixed Expenses} \\ &= \text{Rs.40,000} \times \text{Rs.10} - \text{Rs.2,00,000} = \text{Rs.2,00,000.} \end{aligned}$$

$$\text{Selling Price with 10\% reduction} = \text{Rs.20} - 10/100 \times \text{Rs.20} = \text{Rs.18.}$$

$$\text{Contribution} = \text{Rs.18} - \text{Rs.10} = \text{Rs.8.}$$

$$\begin{aligned} \text{Net Break Even Point} &= \frac{\text{Fixed Expenses}}{\text{Contribution per unit}} \\ &= \frac{\text{Rs.2,00,000}}{\text{Rs.8}} = 25,000 \text{ units.} \end{aligned}$$

$$\begin{aligned} \text{Desired Production or Sales} &= \frac{\text{Fixed Expenses} + \text{Profit}}{\text{Contribution per unit}} \\ &= \frac{\text{Rs.2,00,000} + \text{Rs.2,00,000}}{\text{Rs.8}} = 50,000 \text{ units.} \end{aligned}$$

Problem No.4:

Sincere Company Ltd., is placed in the following position at present:

	Rs.
Sales (20,000 units @ Rs.10 each)	2,00,000
Variable costs @ Rs.5 per unit	1,00,000
Contribution	<u>1,00,000</u>
Fixed Costs	60,000
Profit	<u>40,000</u>

You are required to calculate the Break-even point and margin of safety and also to provide information to the management regarding the possible effects of the following contingencies (each to be considered separately).

1. Fixed costs increase by 10%
2. Variable costs decrease by 20%
3. Selling price is increased by 20%
4. Sales volume is increased by 10%

Suitable charts may be presented showing the effect of these changes in profit factors.

Workings:

$$\begin{aligned} \text{(a) Break Even Point} &= \frac{\text{Fixed costs} \times \text{Sales}}{\text{Sales} - \text{Variable costs}} = \frac{P \times S}{S - V} \\ &= \frac{60,000 \times 2,00,000}{1,00,000} = \text{Rs.1,20,000} \\ \text{B E P} &= \text{Rs.1,20,000} \\ \text{(b) Margin of safety} &= \frac{\text{Profit} \times \text{Sales}}{\text{Sales} - \text{Variable costs}} \end{aligned}$$

$$\frac{S \times P}{C} = \frac{40,000 \times 2,00,000}{1,00,000}$$

$$Ms = Rs.80,000$$

Effects of changes in profit factors:

(1) Fixed costs increased by 10

So the new fixed costs = 60,000 + [60,000 x 10/100] = Rs.66,000

Note: Since fixed costs have increased by Rs.6,000 profit will be reduced to some extent (because other factors are remaining constant). This can be verified as follows:

	Rs.
Sales	2,00,000
Variable costs	1,00,000
Contribution	<u>1,00,000</u>
Fixed Costs	66,000
Profit	<u>34,000</u>

$$34,000 = (40,000 - 6,000)$$

Note: Since fixed costs have increased the break even sales will also be increased, in the chart shown below, the total costs line and the sales line intersect at a point indicating break-even sales of Rs.1,32,000. Thus, break even sales is increased by Rs.12,000 (i.e., to absorb the additional fixed costs of Rs.6,000. The company has to effect the sales for Rs.12,000 more and reach the B.E.P.)

$$B.E.P = F \times \frac{S}{C}$$

$$= 66,000 \times \frac{2,00,000}{1,00,000} = Rs.1,32,000$$

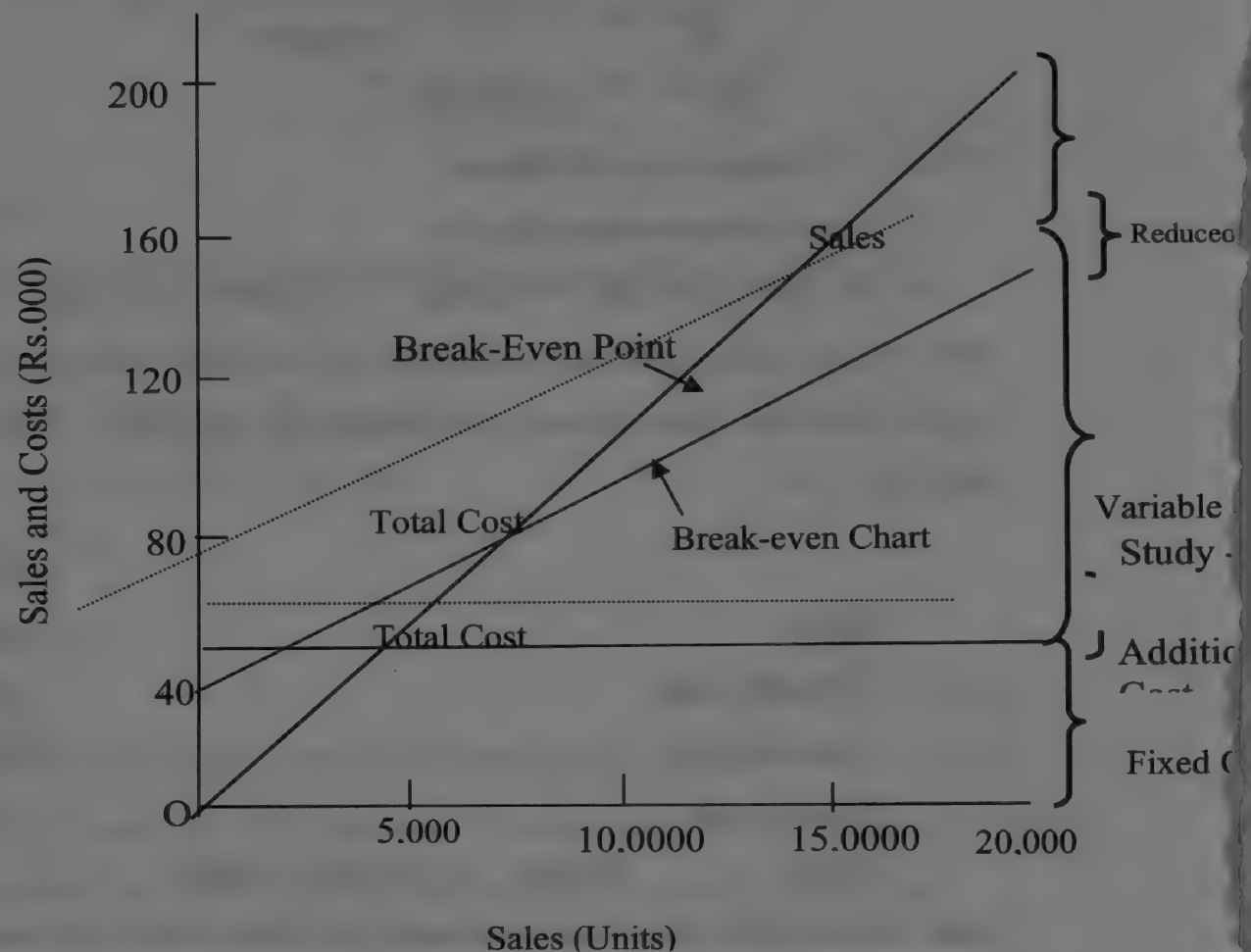
i.e., an increase of Rs.12,000

At the present level of sales, the break-even sales have increased. Therefore, the remaining margin (Margin of Safety) will be decreased i.e.,

$$M.S. = P \times \frac{S}{C}$$

$$= 34,000 \times \frac{2,00,000}{1,00,000} = Rs.68,000 \text{ (i.e., a decreased of Rs.12,000)}$$

These effects can be depicted by the following chart:



BREAK-EVEN CHART SHOWING EFFECT OF 10% INCREASE IN FIXED COSTS

(2) Effects of a Decrease in variable cost by 20%

When the variable costs decrease, the contribution ratio (P.V. Ratio) increases, thereby reducing the break even sales volume and increasing profits and margin of safety. That is, the company reaches the break-even point sooner than before, and after that stage profit is earned at an accelerated rate. In our illustration 20% decrease in variable cost will give following results.

(a) Increase in Profits

	Rs.
Sales	2,00,000
Variable costs 1,00,000 – (1,00,000 x 20/100)	80,000
Contribution	<u>1,20,000</u>
Fixed Costs	60,000
Profit	<u>60,000</u>
Net Profit	Rs.60,000
Original Profit	<u>Rs.40,000</u>
Additional profit	<u>Rs.20,000</u>

(b) Decrease in the break-even point

Since a reduced variable cost leaves more contribution, fixed costs are absorbed sooner, So the break-even volume is reduced as follows:

$$\begin{aligned}\text{B.E.P} &= F \times \frac{S}{C} \\ &= 60,000 \times \frac{2,00,000}{1,00,000} = \text{Rs.1,00,000} \\ \text{New B.E.P.} &= \text{Rs.1,00,000} \\ \text{Original B.E.P.} &= \text{Rs.1,20,000} \\ \text{Decrease in B.E.P.} &= \text{Rs. 20,000}\end{aligned}$$

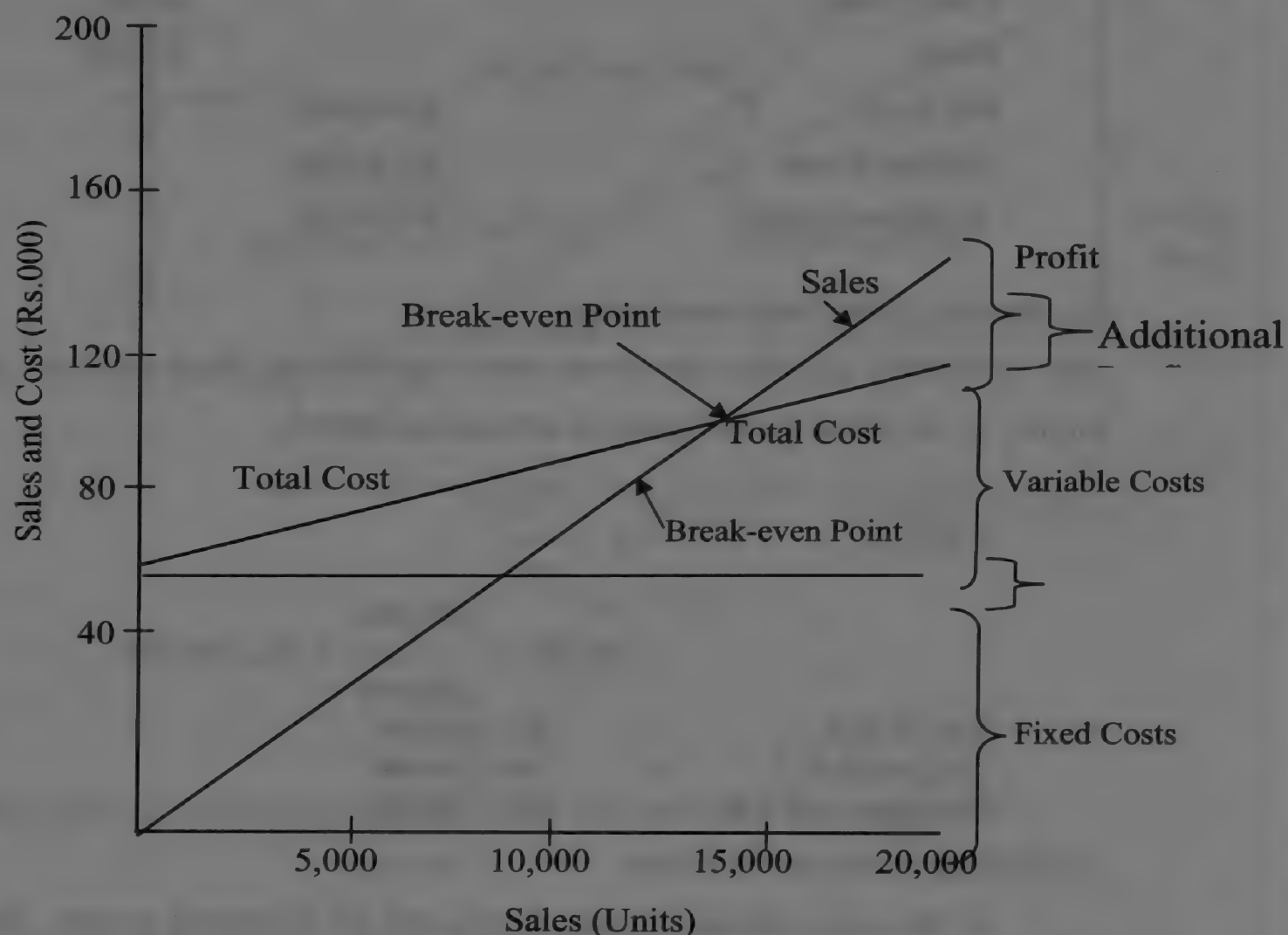
(c) Increase in Margin of Safety

At the same volume of sales, fixed costs are recovered sooner. Therefore, margin of safety will be increased as follows:

$$\begin{aligned}\text{Margin of Safety} &= P \times \frac{S}{C} \\ &= \frac{60,000 \times 2,00,000}{1,00,000} = \text{Rs.1,00,000} \\ \text{M.S.} &= \text{Rs.1,00,000} \\ \text{Original M.S.} &= \text{Rs. 80,000} \\ \therefore \text{Increase in M.S.} &= \underline{\text{Rs. 20,000}}\end{aligned}$$

Thus, a decrease in marginal cost by 20% results in an additional contribution of Rs.20,000 with the consequences of :

- (a) Rs.20,000 increase in profit
- (b) Rs.20,000 increase in Margin of Safety and
- (c) Rs.20,000 decrease in B.E.P. Sales.



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AK-

EVEN CHART SHOWING EFFECT OF 20% DECREASE IN VARIABLE COSTS

(3) Effects of increase in the selling price by 20% Others factors remaining constant, the price of the products increased by 20% (i.e., from Rs.10 to Rs.12). Therefore, obviously profit will be increased as follows:

	Rs.
Sales (20,000 units @ Rs.12 each)	2,40,000
Variable costs (remaining constant as Rs.5 per unit)	1,00,000
Contribution	<u>1,40,000</u>
Fixed Overheads	60,000
New Profit	<u>80,000</u>
Original Profit	<u>40,000</u>
(a) Additional profit	<u>40,000</u>

$$\text{B.E.P} = F \times \frac{S}{C}$$

$$= 60,000 \times \frac{2,40,000}{1,40,000} = \text{Rs.} 1,40,000$$

$$\text{New B.E.P.} = \text{Rs.} 1,40,000$$

$$\text{Original B.E.P.} = \text{Rs.} 1,02,857$$

$$(b) \text{ Decrease in B.E.P.} = \text{Rs.} 17,143$$

$$\text{Margin of Safety} = P \times \frac{S}{C}$$

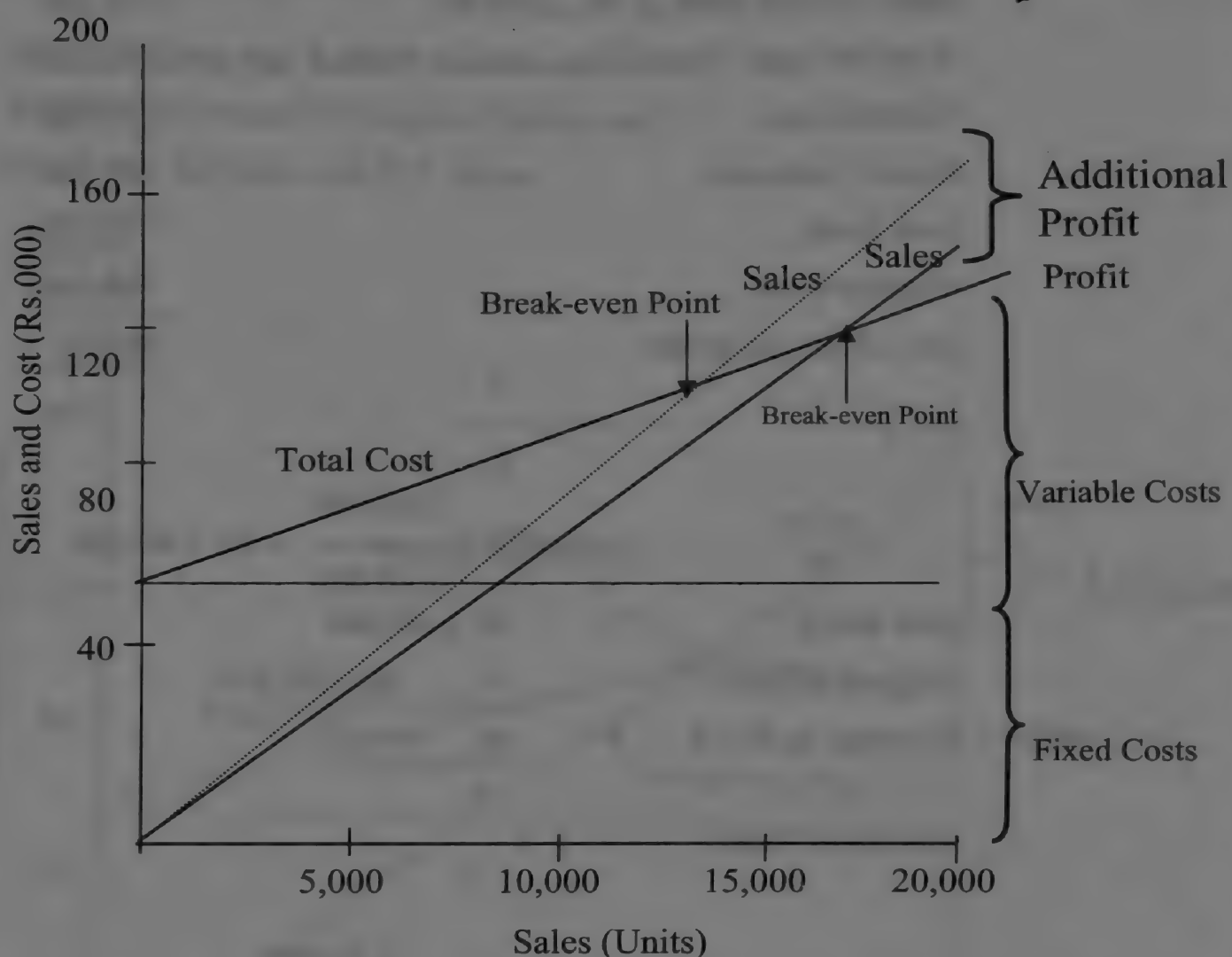
$$= 80,000 \times \frac{2,40,000}{1,40,000} = \text{Rs.} 1,37,143$$

$$\text{M.S.} = \text{Rs.} 1,37,143$$

$$\text{Original Margin} = \text{Rs.} 80,000$$

$$\therefore \text{Increase in M.S.} = \text{Rs.} 57,143$$

These results (a, b and c) are illustrated in the following chart:



BREAK-EVEN CHART SHOWING EFFECT OF 20% INCREASE IN SELLING PRICE

(4) Effects of an expansion in sales volume by 10%

With the same costs at the price, more number of units are sold now. Therefore, the volume of profit will be increased with extended Margin of safety. However, the break even position will remain constant because the contribution rate (PV/Ratio) does not change. The following will be the result.

	Rs.
Sales (20,000 units @ Rs.10 each)	2,20,000
Variable costs (22,000 x Rs.5)	1,10,000
Contribution	1,10,000
Fixed Overheads	60,000
Profit Original Profit	50,000

Original Profit	40,000
(a) Additional profit	10,000

$$\text{B.E.P} = F \times \frac{S}{C}$$

$$= 60,000 \times \frac{2,20,000}{1,10,000} = \text{Rs. } 1,20,000$$

$$\text{B.E.P.} = \text{Rs. } 1,20,000$$

(No change in this position)

$$\text{Margin of Safety} = P \times \frac{S}{C}$$

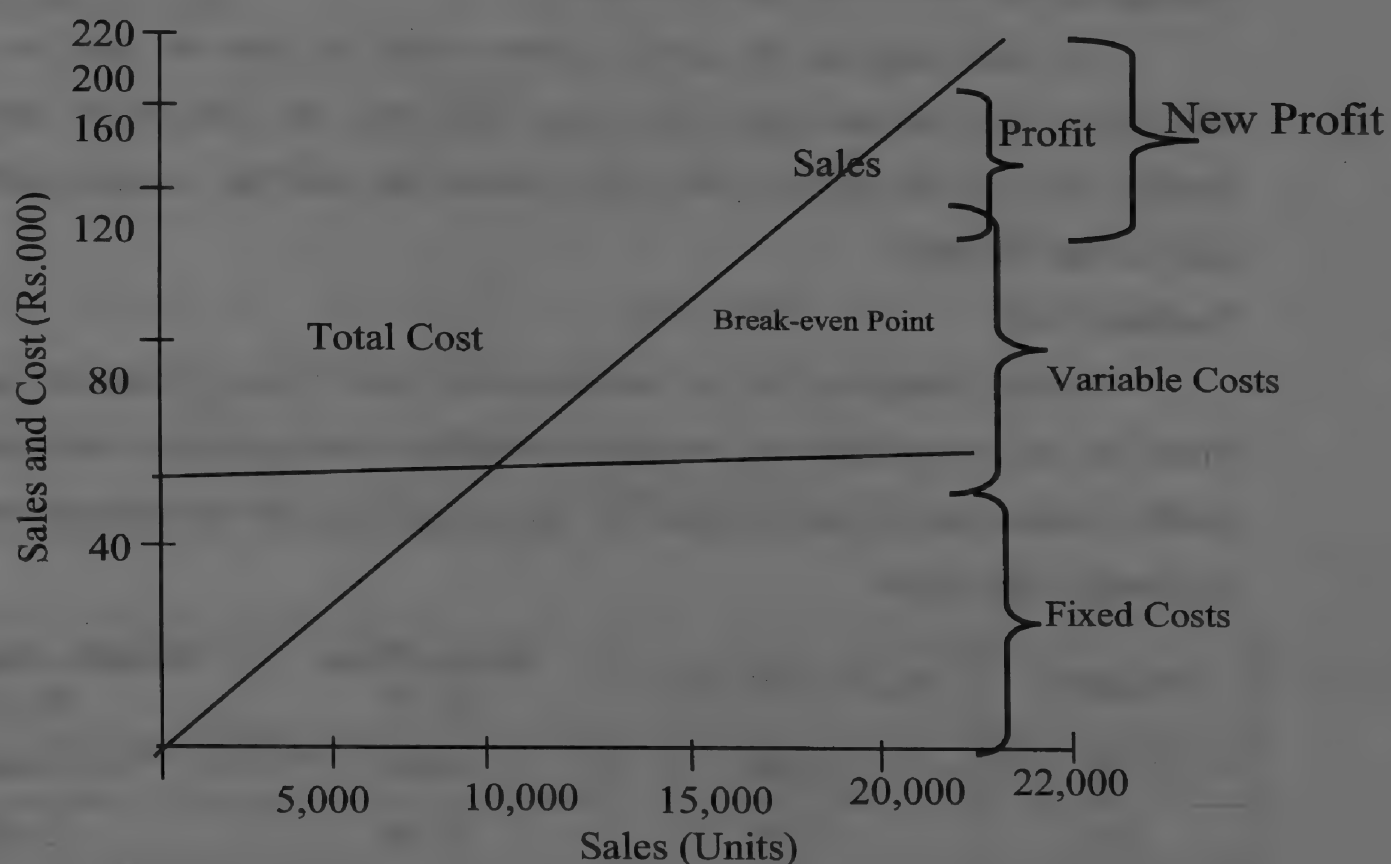
$$= 50,000 \times \frac{2,20,000}{1,10,000}$$

$$\text{M.S.} = \text{Rs. } 1,00,000$$

$$\text{Original Margin} = \text{Rs. } 80,000$$

$$\therefore \text{Increase in M.S.} = \text{Rs. } 20,000$$

These above results can be picturised with the help in the following chart:



BREAK-EVEN CHART SHOWING EFFECT OF 10% INCREASE IN SALES VOLUME

SALES MIX

A Company may produce and sell more than one product. Each product may contribute (towards fixed costs and profit) in different ratios. The cumulative effect to the contributions made by all the products determines the amount of profit. Among these products one may contribute more than the other product. However, the profitable product alone cannot be product by eliminating the others, because there may be limiting factors like the restricted market for the product, necessity of utilizing the scraps in the production of by-products and the like.

Still, the mix of the product can be so altered as to give the maximum possible profit within the limitations by these products. Therefore, it is not enough to provide the management with the information, which will show the information of overall profit, earned by all the products together, it should also be informed of the individual contribution of the product and of the effect of any changes in the mix on the profit earned.

For this purpose, the profit-volume chart can also be used to show the analysis of the product mix. This chart will show the cumulative effect of the product mix on the profit of the organisation and also the overall profit-volume ratio of the business.

Problem No.5

Sankar Company Ltd., is manufacturing three types of consumer goods. From the following statistics, analyse the results showing (a) the contribution and profit-volume ratio of each product (b) the overall ratio for the company and (c) the break-even point.

Products	No. of Units Sold	Selling Price Rs. P.	Variable Cost Per Unit Rs. P.
A	5,000	10-00	4-00
B	2,000	15-00	9-00
C	2,000	10-00	12.50

Fixed expenses amounted to Rs.22,000

The results may be depicted by means of an appropriate chart.

Workings:

Contributions made by the products:				Rs.
A	:	[5,000 x (Rs.10 – 4)]	=	30,000
B	:	[2,000 x (Rs.15 – 9)]	=	12,000
C	:	[2,000 x (Rs.10 – 12.50)]	=	-5,000
Total Contribution				<u>37,000</u>

$$\text{Overall P.V. Ratio} = \frac{C}{S} \times 100$$

$$= \frac{37,000}{1,00,000} \times 100 = 37\%$$

$$\text{Company's break even point} = \frac{F}{\text{P.V. Ratio}}$$

$$= \frac{22,000}{37\%} = \frac{22,000}{37} \times 100 = \text{Rs.}59,460.$$

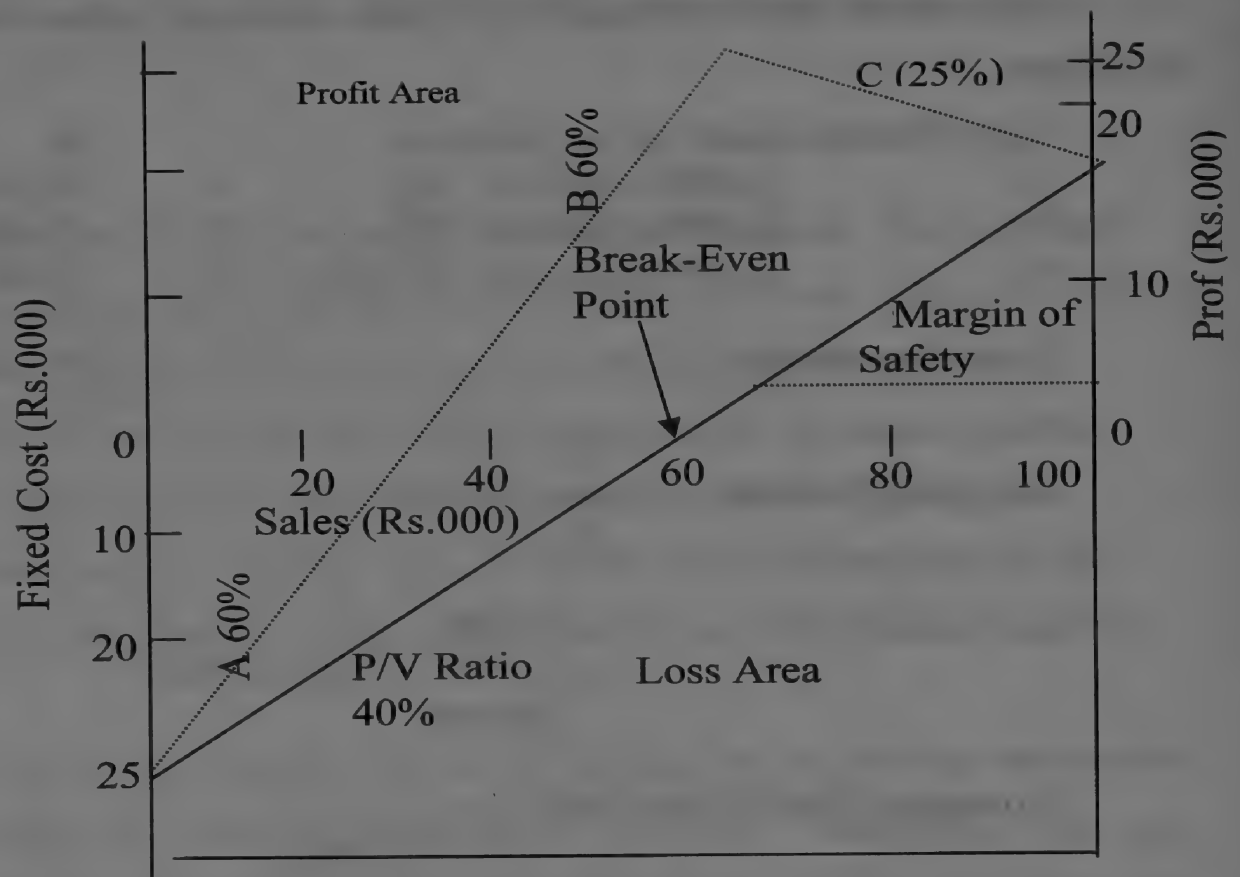
$$\text{Individual Ratios} = \frac{S.V.}{S} \times 100$$

$$\text{A} = \frac{30,000}{50,000} \times 100 = 60\%$$

$$\text{B} = \frac{12,000}{30,000} \times 100 = 40\%$$

$$\text{C} = \frac{-5,000}{20,000} \times 100 = -25\%$$

If the above figures are plotted in a regular profit volume chart, it will appear as follows.



5. Key Factor – Limiting Factor

There are always factors that do not lend themselves to managerial control. Key factor is the factor whose influence must be first ascertained to ensure that there is maximum utilisation of resources. Gearing the production process in the light of key factors' influences will lead to maximization of profit. Key factor constrains managerial action and limits output of company. Generally sales is the limiting factor, but any of the following factors can be a limiting factor:

a) Material b) Labour c) Plant capacity d) Power e) Government Action.

When Limiting factor is in operation and a decision is to be taken regarding relative profitability of different products, contribution for each product is divided by key factor to select the most profitable alternative.

8.10 BASIC MARGINAL COST EQUATION

We, Know that Sales – Cost = Profit

or Sales – (fixed cost + Variable cost) = Profit

Sales – Variable cost = Fixed Cost + Profit

This is known as marginal cost equation and it is also expressed as follows

$$S - V = F + P \quad (7.11)$$

8.11 MARGINAL COST STATEMENT

Sales		

(-)	Variable	Cost

--		
Contribution		

(-)	Fixed	Cost

Profit		

8.12 PROFIT/VOLUME RATIO

When the contribution from sales is expressed as a percentage of sales value, it is known as profit/ volume ratio (P/ V Ratio). It expresses relationship between contribution and sales. Better P/V ratio is an index of sound 'Financial Health' of a company's product. This ratio reflects change in profit due to change in volume. The other terms being used to refer to PV ratio are ;a) Marginal income ratio b) contribution to sales ratio b) variable profit ratio.

P/V ratio may be expressed as:

$$\begin{aligned}\text{P/V ratio} &= (\text{Sales} - \text{Marginal cost of sales}) / \text{Sales} \\ &= \text{Contribution} / \text{Sales} \times 100 \\ &= \text{Changes in Contribution} / \text{Changes in Sales} \times 100 \\ &= \text{Changes in Profit} / \text{Changes in sales} \times 100\end{aligned}$$

Advantages of P/V Ratio

- i) It helps in determining the break-even point
- ii) It helps in determining profit at various levels of sales
- iii) It helps to find out the sales volume to earn a desired profit
- iv) It helps to determine relative profitability of different products, processes and departments.

Improvement of P/V Ratio

P/V ratio can be improved, if contribution is improved. Contribution can be improved by any of the following steps.

- i) Increase in sales price,

- ii) Reducing marginal cost by efficient utilization of men, material and machines
- iii) Concentrating on the sale of products with relatively better p/v ratio. This will help to improve overall P/V ratio.

8.13 MARGIN OF SAFETY

Margin of Safety represents the difference between sales at a given activity and sales at break-even point. Consequently, it indicates the extent to which a fall in demand could be absorbed, before company begins to sustain losses. The margin of safety is expressed as percentage of sale. The validity of safety always depends on the accuracy of cost estimates. The wide margin of safety is advantageous for the company. Margin of safety depends on level of fixed cost, rate of contribution and levels of sales. The relationship of safety with sales can be expressed as follows:

Actual Sales – Sales at B.E.P = Margin of Safety

Thus soundness of a business can be measured by margin of safety. This knowledge is very useful in taking policy decision like reduction in price to face the competitors.

8.14 IMPROVEMENT IN MARGIN OF SAFETY

1. **Increase in sales volume.** It widens the difference between sales at activity level and sales at break even point
2. **Increase in selling price.** If it is not possible to increase sales volume,. Selling price is increased to improve the margin of safety.
3. **Changes in product mix thereby increasing contribution.** This will lead to improvement in margin of safety, because it widens the gap of sales at specified activity level and sales at break-even point.
4. **Lowering fixed cost.** It increases margin of safety, because break-even sales go down by lowering fixed cost.
5. **Lowering fixed variable overhead.** It increases margin of safety by improvement in P/V ratio.

8.15 ANGLE OF INCIDENCE

The angle, which the sales line, makes with the total cost lines, is known as the angle of incidence. This angle gives the pictorial relationship between profit and sales. This angle indicates the profit earning capacity of the company over the break-even point. A large angle of incidence will indicate earning of high margin of profit. Small angle of incidence will indicate earning of low margin of profit. Low angle indicates that variable costs form a major part of cost of sales.

Problem No.1

Calculate Break-Even Point from the following particulars.

Fixed expenses Rs.150000

Variable cost per unit Rs.10

Selling price per unit Rs.15

Solution:

$$\begin{aligned} \text{B.E. P (in units)} &= \frac{\text{Fixed Expenses}}{\text{Contribution per unit}} \\ \text{Contribution per unit} &= \text{Selling price} - \text{Variable cost} \\ &= \text{Rs.15} - \text{Rs.10} = \text{Rs.5} \\ \text{Break Even point} &= \text{Rs.150000} / \text{Rs.5} = 30000 \text{ units} \\ \text{Break Even point (Rs.)} &= \text{BEP in units} \times \text{Selling Price} = \text{Rs.30000} \times \text{Rs.5} \\ &= \text{Rs.4,50,000.} \end{aligned}$$

Problem No. 2

You are given the data of the XYZ Ltd., for the year ended on 31st March, 2001

Sales 100000 units of Rs.10 each

Variable cost per unit Rs.6

Fixed cost per annum Rs.300000

Calculate margin of safety.

Solution:

To calculate the margin of safety, first the P/V ratio is to be find out

$$\begin{aligned} \text{Contribution} &= \text{Selling price} - \text{Variable cost per unit} \\ &= \text{Rs.10} - \text{Rs.6} = \text{Rs.4 per unit} \end{aligned}$$

$$\text{P/V Ratio} = \text{Rs.4} / \text{Rs.10} \times 100 = 40\%$$

$$\begin{aligned} \text{Profit} &= \text{Sales} - \text{Variable cost} - \text{Fixed cost} \\ \text{Rs.10,00,000} - \text{Rs.6,00,000} - \text{Rs.3,00,000} &= \text{Rs.1,00,000} \end{aligned}$$

$$\begin{aligned} \text{Margin of safety} &= \frac{\text{Profit}}{\text{P/V ratio}} \\ &= \text{Rs.1,00,000} / 40\% \\ &= \text{Rs.2,50,000.} \end{aligned}$$

Problem No.3

Calculate P/V ratio and fixed expenses for the following

Margin of Safety Rs.80000

Profit Rs.20000

Sales Rs.300000

Solution:

Calculation of P/V ratio

$$\begin{aligned} \text{Margin of safety} &= \frac{\text{Profit}}{\text{P/V ratio}} \\ \text{Rs.80000} &= \text{Rs.20000} / \text{P/V ratio} \\ \therefore \text{P/V ratio} &= 25\% \\ \text{Contribution} &= \text{Sales} \times \text{P/V ratio} \\ &= \text{Rs.300000} \times \text{P/V Ratio} \\ &= \text{Rs.75000} \end{aligned}$$

Fixed Expenses

$$\begin{aligned} \text{Contribution} &= \text{Fixed expenses} + \text{Profit} \\ \text{Rs.75000} &= \text{Fixed expenses} + \text{Rs.20000} \\ \text{Fixed expenses} &= \text{Rs.75000} - \text{Rs.20000} = \text{Rs.55000} \end{aligned}$$

Problem : 4

You are given the data of Gemini products ltd for the year ended 31, December 2003

Your are to calculate

- Numbers of units to be sold to earn a profit of Rs.120000
- Sales to earn a profit of Rs.120000.

Selling price per unit	Rs.40
Variable selling cost per unit	Rs.3
Variable manufacturing cost per unit	Rs.22
Fixed factory overheads	Rs.160000
Fixed selling cost	Rs.20000

Solution:

i) Number of units to be sold to earn a profit of Rs.120000

$$\text{Estimated sales} = \frac{\text{Fixed expenses} + \text{Desired Profit}}{\text{Contribution per unit}}$$

$$\text{Contribution per unit} = \text{Rs.40} - \text{Rs.25} = \text{Rs.15}$$

$$= \frac{180000 + 120000}{15} = 20000 \text{ units}$$

ii) Sales to earn a profit of Rs.120000:

$$= \frac{\text{Fixed expenses} + \text{Desired profit}}{\text{Contribution per unit}} \times \text{selling price}$$

$$= \frac{180000 + 120000}{15} \times \text{Rs.40} = \text{Rs.800000}.$$

Problem No.5

The Moon Limited has prepared the following budget estimates for the year 2004.

Sales (units)	15000
Total Sales (Rs.)	Rs.150000
Fixed expenses	Rs.34000
Variable cost	Rs.6 per unit

You are required to calculate:

- the p/v ratio, break even point and margin of safety
- Calculate the revised p/v ratio, break even point and margin of safety in each of the following cases:
 - Decrease of 10% in selling price
 - Increase of 10% in variable costs;
 - Increase of sales volume by 2000 units
 - Increase of Rs.6000 in fixed cost

Solution:**I. At the existing level:**

P/V Ratio	=	$\frac{\text{Contribution}}{\text{Sales}} \times 100$
Sales Value	=	Rs.150000
Selling units	=	15000
∴ Selling price per unit	=	Rs.150000 / 15000 = Rs.10
Contribution	=	Rs.10 – Rs.6 = Rs.4
P/ V ratio	=	4 / 10 x 100 = 40%
B.E.P (in units)	=	$\frac{\text{Fixed Expenses}}{\text{Contribution per unit}}$
	=	34000 / 4 = 8500 units
B.E.P. in Rs.	=	8500 units X Rs.10 = Rs.85000
Margin of Safety	=	Sales – Sales at B.E.P
	=	Rs.150000 – Rs.85000 = Rs.65000

II a) Decrease of 10 % in selling price

Existing Selling Price	=	Rs.10
Decrease in 10%	=	Re. 1
Revised Selling price	=	Rs.9 per unit
Contribution	=	Rs.9 – Rs.6 = Rs.3 per unit
P/V ratio = 3 / 9 X 100	=	33 1/3 %
B.E.P in units	=	Rs.34000 / 3 = 11333 units
BEP in Rupees	=	11333 X 9 = Rs.101997
Margin of Safety	=	(Rs.150000 x 9) – (101997)
	=	(Rs.135000 – Rs.101997 = Rs.33003.

b) Increase of 10% in variable

Variable cost per unit	=	Rs.6.00
Add : 10 increase	=	Rs.0.60
Revised variable cost	=	Rs.6.60 per unit
Contribution	=	Rs.10 – Rs.6.60 = Rs.3.40
P/V ratio	=	3.40 / 10 X 100 = 34%
B.E.P in units	=	34000 / 3.40 = 10000 units

BE.P in rupees = $10000 \times \text{Rs.}10 = 100000$
 Margin of safety = $\text{Rs.}150000 - \text{Rs.}100000 = \text{Rs.}50000$

c) Increase of sales volume by 2000 units;

Sales = 15000 units
 Add : increase = 2000 units
 Revised sales = 17000 units
 P/V ratio = $4 / 10 \times 100 = 40\%$
 B.E.P in units = $34000 / 4 = 8500$
 B.E.P in rupees = $8500 \times 10 = \text{Rs.}85000$
 Margin of Safety = $(17000 \times 10) - \text{Rs.}85000$
 = $\text{Rs.}170000 - \text{Rs.}85000 = \text{Rs.}85000$

d) increase of Rs.6000 in fixed costs;

P/V ratio = $4/10 = 40\%$
 Fixed costs = Rs.34000
 Add: increase = Rs. 6000
 Revised Fixed Cost = Rs.40000
 BEP in units = $\text{Rs.}40000 / 4 = 10000$
 B.E.P in Rs. = $10000 \times 10 = \text{Rs.}100000$
 Margin of Safety = $\text{Rs.}150000 - \text{Rs.}100000 = \text{Rs.}50000$

Problem No.6

The following particulars are available for two periods:

Particulars	Period I (Rs.)	Period II (Rs.)
Sales	200000	300000
Total cost	180000	260000

Calculate:

- P/V Ratio
- Break-Even Point
- Sales required to earn a profit of Rs.50000
- Profit when sales are Rs.500000
- Margin of safety at a profit of Rs.25000

Particulars	Period I (Rs.)	Period II (Rs.)
Sales	200000	300000
Less : Total cost	180000	260000
Profit	Rs.20000	Rs.40000

Changes in Profit

i) P/V ratio = $\frac{\text{Changes in Profit}}{\text{Changes in Sales}} \times 100$

Changes in Sales

= $\frac{\text{Rs.20000}}{\text{Rs.100000}} \times 100 = 20\%$

ii) Fixed cost

= (Sales X P/V ratio) - Profit

= $200000 \times 20\% - \text{Rs.20000} = \text{Rs.40000} - \text{Rs.20000} = \text{Rs.20000}$

Break Even point
Rs.100000

= Fixed Cost / P/V ratio = $20000 / 20\% =$

iii) Sales required to earn a profit of Rs.50000

Fixed cost + Profit

= $\frac{20000 + 50000}{20\%} = \text{Rs.350000}$

P/V Ratio

iv) Profit when sales are Rs.500000

Profit = (Sales X P/V Ratio) - Fixed Cost
500000

= $\frac{500000}{100} \times 20 - \text{Rs.20000} = \text{Rs.80000}$

Margin of safety as a profit of Rs.25000

Margin of Safety = Profit / P/V ratio = $\text{Rs.25000} / 20\% = \text{Rs.125000}$

Problem No.7

The New Born Toy Ltd earns an average net profit of Rs.3 per piece in a selling price of Rs.15 by producing and selling 60000 pieces at 60% of the potential capacity. Composition of his cost of sales is:

Direct material : Rs.4

Direct wages : Re.1

Works overhead : Rs.6 (50% fixed)

Sales overhead : Re.1 25% variable)

During the current year, he intends to produce the same number but anticipates that:

- His fixed chares will go up by 10%
- Rates of direct labour will increase by 20%
- Rates of direct material will increase by 5%
- Selling price cannot be increased.

Under these circumstances, he obtains an order for a further 20% of his capacity. What minimum price will you recommend for accepting the order to ensure the manufacturer an overall profit of Rs.180500?

Solution

Marginal Cost for the Year

Direct material	Rs.4.20
Direct wages	Rs.1.20
Variable overhead;	
Works overhead	Rs.3.00
Sales overhead	Rs.0.25

Total marginal cost	Rs.8.65
Contribution per unit	Rs.6.35

Selling price	Rs.15.00

Statement of Profit on Sale of 60000 Units

Sales		Rs.900000	
Less: Variable cost (60000 X 8.65)		Rs.519000	

Contribution		Rs.381000	
Fixed Works overheads (180000 + 18000)	198000		
Fixed Sales overheads (45000 + 4500)		49500	Rs.247500

Profit for 60,000 units			Rs.133500

Desired Profit		Rs.1,80,500	
Less: Profit for 60,000 units		Rs.1,33,500	

Profit to be earned for 20000 units			Rs.47000

Statement of Minimum Selling Price per Unit

An order of 20000 Units

Variable cost (20000 X 8.65)	Rs.173000
Desired Profit for 20,000 units	Rs. 47000

Selling Price for 20,000 units	Rs.220000
Selling price per unit = Rs.220000 / 20000 = Rs.11.	

8.16 COST – VOLUME - PROFIT ANALYSIS (CVP ANALYSIS)

Cost-Volume-Profit (CV)) analysis studies the interrelationship between the expenses (cost), revenue (sales) and net income (net profit). The aim is to establish what will happen to financial results if a specified level of activity or volume fluctuates, that is the implication of levels of changes in costs, volume of sales or prices on profit.

The CVP analysis is the study of the inter-relationships of cost behaviour patterns, levels of activity and the profit that results from each alternative combination. In decision-making, management pays a great deal of attention to the profit opportunities of alternative courses of action. The price of a product depends upon so many external and internal factors such as market demand, competitive conditions of the market, management's marketing policies etc. cost of the product is influenced by numerous factors such as volume, Product mix price of inputs, size of lot or order, size of plant, efficiency in production and marketing accounting methods etc. The alternatives that involve changes in the level of business activity profit do not usually vary in direct proportion to these changes in volumes. This is as a result of the cost behavior patterns. Better evaluation can be made of profit opportunities by studying the relationships among costs, volume and profits. Profit is clearly a function of sales volume, selling prices and the costs.

Procedure: CVP analysis combines the concepts and techniques listed above by initially following the procedure given below:

- Establishing the fixed and variable costs related to product
- Calculating the relationship between sales volume and revenue by reference to actual or assumed unit prices.
- Working out the Profit-Volume (P/V ratio by calculating contribution sales revenue minus variable cost) levels on cost and profits.
- Drawing up break-even charts, which establish the point at which sales begin to earn profits.

- Deducing from the break-even analysis the margin of safety ratio to indicate the levels of profit as different volumes of sales above the break-even point.
- Determining the cumulative or combined effect of each product on profitability to assess the effects of changes in the product mix.

The outcomes of each of the above analysis are then linked to answer such questions as follows:

- What sales revenue must be achieved to recover fixed costs?
- By what percentage can current sales drop before the margin of safety is exhausted and break-even point is reached?
- How will different levels of sales affect profits?
- What level of sales revenue must be achieved to reach profit targets?
- What are the implications of increase or decrease in costs per unit or fixed costs in profit?
- What is the optimum mix of products from the point of view of probability?
- What effect will price changes have on profits?

CHECK YOUR PROGRESS – II

1. What do you understand by the term BEP?

2. What do you mean by angle of incidence?

3. What do you understand by the term Margin of safety?

4. When fixed cost is Rs.10000 and P/V ration is 50%, the break – even point will be:

a) Rs.20000

b) Rs.40000

c) Rs.50000

d) None of these

5. When PV ration is 40% and sales volume Rs.10000, the variable costs will be:

a) Rs.4000

b) Rs.6000

c) Rs.10000

d) None of these

6. When Margin of safety is 20% and P/V ratio is 60%, the profit will be
 a) 30% b) 33.33%
 c) 12% d) None of these.
7. ----- is closely related to output.
 a) Fixed cost b) Variable cost
 c) Contribution d) Margin of Safety
8. In the Margin of safety the actual sales is
 a) More than BEP Sales b) Less than BEP sales
 c) Equal to BEP sales d) Nil

8.17 MARGINAL COSTING AND CVP ANALYSIS – AN AID FOR MANAGERIAL DECISION MAKING

1. Fixation of Selling Price

Under the normal circumstances, the price of a product must cover the total costs of the product plus a margin of profit. However, under certain special circumstances, price has to be fixed even below the total cost. For instance, when there is a general trade depression or exploring new markets or accepting additional orders, the producer has to cut the price even below the total cost of the concerned product. Under these special circumstances, the concept of marginal cost is usefully applied to for the prices.

Problem No.8

M Ltd., led to the following information:

Cost element	Variable cost (% of sales)	Fixed Cost
Direct Material	32.8	
Direct Labour	28.4	
Factory Overhead	12.6	189900
Distribution overheads	4.1	58400
Administrative overheads	1.1	66700

Budgeted sales are Rs.1850000. You are required to determine

- the break-even sales volume
- the profit at the budgeted sales volume
- the profit, if actual sales
 - drop by 10%
 - increase by 5% from budgeted sales.

Solution:

Percentage of variable cost of sales is 79% calculated as follows:

Direct Material	32.8%
Direct labour	28.4%
Factory overheads	12.6%
Distribution expenses	4.1%
Administrative overheads	1.1%

Total variable cost 79.0%

Percentage of contribution to Sales = $100 - 79 = 21$

P/V Ratio = Contribution / Sales $21 / 100 = 21\%$

ii) Break-Even Sales Volume

$$= \frac{\text{Fixed cost}}{\text{P.V. Ratio}}$$

$$= \frac{\text{Rs.189900} + \text{Rs.58400} + \text{Rs.66700}}{21\%}$$

$$= \text{Rs.15,00,000}$$

iii) Profit at the budgeted sales of Rs.18,50,000

Percentage of contribution to sales = 21

Contribution at the budgeted sales = $18,50,000 \times 21 / 100 =$
Rs.3,88,500

Profit = Contribution – Fixed Expenses

Rs.3,88,500 – Rs.3,15,000 = Rs.73,500

iv) a) Profit if actual sales drop by 10%

Budgeted sales	Rs.18,50,000
Less: 10 % decline	Rs. 1,85,000

Actual sales Rs.1665000

Contribution 21% of sales $\text{Rs.1665000} \times 21/100 = \text{Rs.349650}$

Less Fixed expenses = Rs.315000

Profit Rs.34650

b) Profit if actual sales increase by 5% from budgeted sales

Budgeted sales	Rs.18,50,000
Add 5% increase	Rs. 92,500

Actual sales	Rs.19,42,500

Contribution at 21% of sales Rs.19,42,500 X 21% = Rs.4,07,925

Less: Fixed cost = Rs.3,15,000

Profit -----
Rs.92,925

2. Accepting Bulk Orders or Foreign Market Orders

In times of taking decisions to accept or reject new order or in sub-contracting, the contribution analysis is made as to whether it is profitable to accept or reject new order or in sub-contracting.

3. Make (or) Buy Decision

Make or buy decision is simply the choice between making a part or article within the company and purchasing it from outside. The following considerations apply when taking a make or buy decision.

- The capability of the company to make the item of the capacity (people, plant and space) available and the ability to achieve required quality standards.
- The availability of outside suppliers who can deliver the time in the quantities, quality and time required.
- The differential cost of making or buying the item. This mean consideration has to be given to these conditions:
 - If items, which are currently purchased, are manufactured, what additional or incremental costs will be incurred and how do these compare with the cost being saved.
 - If items are purchased which could be manufactured, what costs will be avoided and how do these compare with the costs, which will be incurred?
- The opportunity cost of using existing capacity to manufacture alternative items, which would make a greater contribution to profit, and fixed costs that, the item under considerations.

4. Selection of Suitable Product Mix

In case of multi product and multi lines of activity, the problem arises as to which product of sale mix will yield maximum profit. Such problems can be solved by marginal costing technique. It helps in discontinuance of non-profitable products and lines of activity, which will not even cover its variable costs. When an alternative method of manufacturing a product or alternatively is available, the marginal contribution analysis should be made to attractive decision. The alternative yielding the highest contribution will be selected.

When the management as to faces a factory manufacturers more than one product, a problem which product will give maximum profits. The solution is the products, which give the maximum contribution, are to be retained and their production should be increased.

Problem No.9

A Ltd., manufactures three different products and the following information has been collected from the books of account;

	Products		
	S	T	Y
Sales mix	35%	35%	30%
Selling Price	Rs.30	Rs.40	Rs.20
Variable Cost	Rs.15	Rs.40	Rs.12
Total fixed costs	Rs.180000		
Total Sales	Rs.600000		

The company has currently under discussion, a proposal to discontinue the manufacture of product Y and replace it with product M, when the following results are anticipated.

	Products		
	S	T	M
Sales mix	50%	25%	25%
Selling Price	Rs.30	Rs.40	Rs.30
Variable Cost	Rs.15	Rs.20	Rs.15

Total fixed costs Rs.180000

Total Sales Rs.640000

Will you advise the company to changeover to production of M? Give reasons for your answer.

Solution

Existing Production:

	Products			
	S	T	Y	Total
Selling Price	Rs.30	Rs.40	Rs.20	
Variable Cost	Rs.15	Rs.40	Rs.20	
Contribution per unit	15	20	8	
P/V Ratio	50%	50%	40%	
Sales mix	35%	35%	30%	
Contribution per rupee				
Of sales	17.5%	17.5%	12%	47%
(P/V Ratio X Sales mix)				
Present sales			Rs.6,00,000	
Total contribution (Rs.6,00,000 X 47%)			RS.2,82,000	
(Less) Fixed Cost			Rs.1,80,000	

Profit			Rs.1,02,000	

Break Even Point = Fixed Cost / P/V Ratio = Rs.1,80,000 / 47% = Rs.3,82,978

Proposed Production

	Products			
	S	T	M	Total
Selling Price	Rs.30	Rs.40	Rs.30	
Variable Cost	Rs.15	Rs.20	Rs.15	
Contribution p.u	15	20	15	
P/V Ratio	50%	50%	50%	
Sales mix	50%	25%	25%	
Contribution per rupee				

Of sales	25%	12.5%	12.5%	50%
(P/V Ratio X Sales mix)				
Present sales				Rs.6,40,000
Total contribution(Rs.6,40,000 X 50%)				Rs.3,20,000
Less Fixed Cost				Rs.1,80,000

Profit				Rs.1,40,000

Break Even Point = Fixed Cost / P/V Ratio = Rs.1,80,000 / 50% = Rs.3,60,000

It is advisable to replace the product Y and M because profit increases by Rs.38,000 and B.E.P is brought down by Rs.22978.

5. Limiting Factor

Marginal Costing can also be used in budgeting, to help the management to determine what the profit-maximising budget. Plan should be when one or more factors of production or other business resources are in short supply. Marginal costing really shows its merit when scarce resources are being considered.

Examples of resource restrictions, which may apply, are as follows:

- Limit to the availability of particular grade of labour
- Short supply of raw material
- Limit to machine capacity.

If labour supplies, materials availability, machine capacity or cash availability limit production to less than the volume, which could be achieved, management is faced with the problem of deciding what to produce and what not to produce, because there are insufficient resources to make every thing. The limiting factor is often sales demand itself, in which case the business should produce enough goods or services to meet the demand in full, provided that sales of the goods earn a positive contribution towards fixed cost and profits.

Problem No.10

The following particulars are obtained from costing records of a factory.

	Product A (per unit) Rs.	Product B (per unit) Rs.
Selling price	200	500
Materials (Rs.20 per unit Kg.)	40	160
Labour (Rs.10 per hour)	50	100
Variable overhead	20	40
Total fixed overheads – Rs.15000		

Comment on the profitability of each product when:

- raw materials is in short supply;
- production capacity is limited;
- sales quantity is limited
- sales value is limited
- only 1000 kg. of raw material is available for both the products in total and maximum sales quantity of each product is 300 units.

Solutions:

Particulars	Product A (per unit)	Product B (Per unit)
Selling price	200	500
Less: variable cost		
Materials	40	160
Laboaur	50	100
Variable overhead	20	40
	<u>110</u>	<u>300</u>
Contribution per unit	90	200
C	90	200

i) P/V ratio----- $\frac{X}{S} \times 100 = \frac{90}{200} \times 100 = 45\%$ $\frac{200}{500} \times 100 = 40\%$

ii) Contribution per kg $\text{Rs.}90 / 2 \text{ kg} = \text{Rs.}45$ $\text{Rs.}200 / 8 \text{ kg} = \text{Rs.}25$

iii) Contribution per hour $\text{Rs.}90 / 5 \text{ hrs} = \text{Rs.}18$ $\text{Rs.}200 / 10 \text{ hrs} = \text{Rs.}20$

- a) When raw materials is in short supply, contribution per kg of product A is higher and hence product A is more profitable.
- b) When production capacity is limited, contribution per hour of product B is higher and hence product B is more profitable.
- c) When sales quantity is limited, contribution per unit of product B is higher and hence product B is more profitable.
- d) When sales value is limited, the P/V Ratio of Product A is higher and hence Product A is more profitable.
- e) When Raw materials as well as sales quantity both are limited, the raw materials should first be used for maximum number of units of product A, i.e for 300 units. This will consume 600 kg of material and the balance 400 kg shall be utilized by producing 50 units (400/8) of product B.

f) The profit in such a case would be

Contribution from 300 units of product A (300 X 90)	Rs.27000
Contribution form 50 units of product B (50 X 200)	Rs.10000
Total contribution	Rs.37000
Less fixed cost	Rs.15000

Maximum profit	Rs.22000

6. Maintaining Desired Level of Profit:

Problem No.11

A company produces and markets industrial containers and packing cases. Due to competition the company proposes to reduce the selling price. If the present level of profit is to be maintained indicate the number of units to be sold if the proposed reduction in selling price is I) 5% ii) 10% iii) 15%

The following additional information is available:

Present sales (30000 units)	Rs. 300000
Variable costs (30000 units)	Rs.180000

Contribution	Rs.120000
Less : fixed cost	Rs. 70000

Profit	Rs. 50000

Solution:

Present price is Rs.10

If the reduction is 5% = $10 - 5/100 \times 10 = \text{Rs.}9.50$

If the reduction is 10% = $10 - 10/100 \times 10 = \text{Rs.}9.00$

If the reduction is 15% = $10 - 15/100 \times 10 = \text{Rs.}8.50$

Contribution at various proposed selling prices:

	Price reduction at		
	5%	10%	15%
	Rs.	Rs.	Rs.
Selling price	9.50	9.00	8.50
Less : variable cost	6.00	6.00	6.00
Contribution	3.50	3.00	2.50

The contribution required to maintain the present level of profit as follows:

Present sales	=	Rs.300000
Variable cost	=	Rs.180000
Contribution		Rs.120000

Units to be sold to earn the total contribution of Rs.1,20,000 to maintain the present level of profits.

= Total contribution required / Contribution per unit

- a) If the price is reduced by 5% = $120000 / 3.50 = 34286$ units
 b) If the price is reduced by 10% = $120000 / 3 = 40000$ units
 c) If the price is reduced by 15% = $120000 / 2.50 = 48000$ units

Problem No.12

A, B and C are three similar plants under the same management who want them to be merged for better operations. The details are as under:

PLANT	A	B	C
Capacity Operated	100% (Rs.in lakhs)	70% (Rs.in lakhs)	50% (Rs. in lakhs)
Turnover (sales)	300	280	150
Variable cost	200	210	75
Fixed cost	70	50	62

Find out:

- i) the capacity of the merged plant for break even
- ii) the profit at 75% capacity of the merged plant
- iii) the turnover from the merged plant to give a profit of Rs.28 lakhs.
- iv) When the merged plant is working at a capacity to earn a profit of Rs.28 lakhs what percentage increase in selling price is required to sustain an increase of 10% fixed output.

Solution:

TURNOVER AND COST STATEMENT OF THREE PLANTS

BEFORE AND AFTER MERGER

Capacity	Plants			Merged Plants
	A	B	C	
	100%	100%	100%	
Turnover	300	400	300	1000
Variable cost	200	300	150	650
Contribution	100	100	150	350
Fixed cost	70	50	62	182

i) P/V Ratio of the merged plant:

$$= \frac{\text{Contribution of the merged plant}}{\text{Turnover of the merged plant}} \times 100$$

$$= \frac{\text{Rs.350 lakhs}}{\text{Rs.1000 lakhs}} \times 100 = 35 \%$$

Break Even Profit (after merger)

$$= \frac{\text{Fixed cost}}{\text{P/V Ratio}} = \frac{\text{Rs.182 lakhs}}{35\%} = \text{Rs.520 lakhs}$$

∴ The capacity of the merged plant at Break even Point

$$= \frac{\text{Turnover of Break-Even Point}}{\text{Total Turnover}} \times 100$$

$$= \text{Rs.520} / \text{Rs.1000 lakhs} = 52\%$$

ii) Calculation of profit at 75% capacity of the merged plant:

		Rs. (in lakhs)
Turnover at 75% capacity	= Rs.1000 X 75 %	= 750
Contribution at 75% capacity	= Rs.750 X 35 %	= 262.5
Less : Fixed cost at merged plant		= 182.0

Profit at 75% capacity of the merged plant		= 80.5

iii) Calculation of Turnover of the merged plant to earn a required profit of Rs.28 lakhs:

$$\begin{aligned} \text{Required Turnover} &= \frac{\text{Fixed cost} + \text{Profit}}{\text{P/V Ratio}} \\ &= \frac{182 + 28}{35\%} \\ &= \text{Rs.600 lakhs} \end{aligned}$$

iv) Percentage of increase in selling price to sustain 10% increase in fixed cost

$$10\% \text{ of fixed cost} = \text{Rs.182} \times 10 / 100 = \text{Rs.18.2 lakhs}$$

$$\text{Percentage of increase in selling price} = \frac{\text{Rs.18.2 lakhs}}{600 \text{ lakhs}} \times 100 = 3.03 \%$$

Problem NO.13

The following information in respect of production of an automatic component has been obtained from the cost records of Permanent Ltd., for a specific period.

Sales (in Units)	10000
Variable cost per unit	Rs.100
Fixed cost	Rs.600000
Loss	Rs.100000

Based on this information, you are required to determine individually,

- Increased sales volume required to get the company reimbursed for an extra cost of Rs.10 per unit for the use of new more effective forged part in the production of the component to increase in the sales at the existing sale price to enable the business to break-even.

- b) The increased sales volume required earning a profit of Rs.100000 with a reduction of 10% in the sale price with a view to counter growing completion.
- c) The increased sales volume without a change in sale price per unit to meet an additional expense of Rs.100000.

Solution:

$$\begin{aligned}\text{Sales} &= \text{Variable cost for 10000 units} + \text{fixed cost} - \text{loss} \\ &= \text{Rs.}100 \times 10000 + \text{Rs.}600000 - \text{Rs.}100000 = \text{Rs.}15,00,000\end{aligned}$$

	Per Unit	Total
Sales	150	1500000
Less: Variable cost	100	1000000
Contribution	50	500000
Less: Fixed cost	60	600000
Loss	10	100000

a) Contribution per unit = Rs.50 – Rs.10 = Rs.40

Break Even Point	=	Fixed Cost
		Contribution per unit
	=	Rs.600000
		Rs.40

$$= 15000 \text{ units or Rs.}22,50,000$$

b) Reduced contribution per unit with 10% reduction in price
 $= \text{Rs.}50 - 10\% \text{ of Rs.}150$
 $= \text{Rs.}50 - 15 = \text{Rs.}35$

Sales volume to earn profit of Rs.100000

$$= \frac{\text{FC} + \text{Profit}}{\text{Contribution per unit}}$$

$$= \frac{600000 + 100000}{\text{Rs.}35}$$

$$\begin{aligned}&= 20000 \text{ units} \\ &= \text{or } 20000 \text{ units} \times \text{Rs.}35 = \text{Rs.}27,00,000 \\ &= \text{Rs.}50\end{aligned}$$

c) Contribution per unit

$$= \frac{\text{Profit} + \text{Add. Exp}}{\text{Contribution per unit}}$$

$$= \frac{\text{Rs.}100000 + 600000 + 50000}{\text{Rs.}50}$$

$$= \frac{\text{Rs.750000}}{\text{Rs.50}}$$

$$= 15000 \text{ units or Rs.22,50,000}$$

Problem No.14

An exclusive show-room sells shirts. It sells 25000 shirts annually, Each shirt is sold for Rs.400 and its purchase cost is Rs.250.

Total fixed cost including rent, salaries, advertising etc., are Rs.24,00,000

Required:

1. Calculate break-even point and margin of safety in number of shirts sold.
2. Compute profit at an annual sale of 20000 shirts.
3. How many shirts would have to sold to earn an income of Rs.2,00,000 ; if the management meets the demand of the sales staff of 2% commission on sales.
4. Calculate break-even point if the management decides to increase the sale-price by 12% and simultaneously spend Rs.200000 on additional advertising campaign.

Solution

1. BEP = fixed costs \ contribution per unit.
 $= 2400000 \div 400 - 250$
 $= 16000 \text{ shirts.}$

$$\text{Margin of safety} = \text{actual sales} - \text{BE sales.}$$

$$= 25000 - 16000 = 9000 \text{ shirts.}$$

2. Profit at the sale of 20000shirts.
 $= \text{Contribution} = 150 \text{Rs.} \times 20000 \text{ shirts.}$
 $= \text{Rs.30,00,000}$

$$\text{Profit} = \text{Contribution} - \text{Fixed costs} = 30,00,000 - 24,00,000 = 6,00,000.$$

3. No. of shirts to earn a profit of Rs.2,00,000. {variable costs(with 2% sales commission)}
 $= \text{Rs.250} + 2\% \text{ of Rs.400.}$
 $= \text{Rs.258.}$

$$\text{Contribution per shirt} = \text{Rs.400} - \text{Rs.258.} = \text{Rs.142.}$$

$$\text{Sales to earn a profit of Rs.200000} = \frac{\text{Fixed cost} + \text{Desired Profit.}}{\text{Contribution per Shirt.}}$$

$$= 2400000 + 200000 \div 142. = 18,310 \text{ shirts.}$$

4. Increased sales price = Rs.400 + 12% of Rs.400.
 $= \text{Rs.448.}$

$$\text{Contribution per unit} = \text{Rs.448} - 250 = \text{Rs.198.}$$

$$\text{BEP} = \text{Rs.2400000} \div 198. = 12,121 \text{ shirts.}$$

Problem No.15

Sheri Raiser college of Arts and Science conducts an MBA course entitled Global Business Operations of two years duration. For admitting students to this course, it holds an entrance examination. The final selection is based on this examination. This examination consists of four objective type papers and is spread over four days. Each candidate is charged a fee of Rs.500 for taking up this entrance test. The following data relate to past two years.

Statement of Net Revenue from the Entrance Test.

Particulars. (Gross Revenue {collected fees} (A)).	2000 Rs.10,00,000	2001 Rs.1500000
Costs.		
Evaluation.	400000	600000
Question cum answer booklets.	200000	300000
Examination hall rent @ Rs.20000 per day.	80000	80000
Honorarium to chief examiner.	10000	10000
Supervisor charge.	40000	60000
(one supervisor for every 100 candidates at the rate of Rs.500 per day).		
General Administration charges.		
Total Cost (B).	60000	60000
	790000	1110000
Net Revenue (A) – (B).	210000	390000

You are required to compute.

- The break-even number of candidates.
- The number of candidates to be enrolled if desired net income is Rs.1,00,000.

Solution:

- (a) As supervision costs vary for every 100 students, it is advisable to compute contribution for 100 students.

Particulars.	Rs.	Rs.
Gross Revenue. (free collection) (Rs.500 x 100).		50000
Less: variable costs.		
Evaluation (Rs.200 x 100).	20000	
Question – cum answer book lets (Rs.100 x 100).	10000	
Supervision charges.	2000	
(variable per 100 students) (Rs. 500 x 4 days).		32000
		18000
Contribution per 100 students.		

BEP = Fixed Costs / Contribution per student.

$$= \text{Rs.}80000 + \text{Rs.}10000 + \text{Rs.}60000 / (\text{Rs.}18000 / 100).$$

$$= \text{Rs.}150000 / \text{Rs.}180.$$

$$= 833.33 \text{ students.}$$

At 833.333 students of the college will not break-even because, it will pay Rs.18000 as supervisory charge while the recovery from students would be Rs.16666.67 (Rs.20 x 833.33 students). This is so because an amount of recovery i.e., Rs.20 is being treated as variable costs while the payment is being made to supervisors on the basis of fixed cost per 100 students. Therefore, some more students need to be added to the figure of 833.333 students to recover the difference of Rs.1333.33 (Rs.18000 – Rs.16666.67) at the rate of Rs.200, i.e., contribution from each students excluding the supervisory costs [Rs.500 – (Rs.200 + Rs.100)].

No. of students to recover the balance cost of Rs.1333.33 = $1333.33 / \text{Rs.}200$.

$$= 6.667 \text{ students.}$$

Total number of students to break-even = $833.333 + 6.667 = 840$ students

Total no. of students to earn a desired income

$$= \text{Fixed Cost} + \text{Desired Income} / \text{Contribution per student.}$$

$$= \text{Rs.}150000 + \text{Rs.}100000 / \text{Rs.}180.$$

$$= 1388.88 \text{ students.}$$

As per reasons, stated above in (a), some more students are to be added to cover the short recovery of Rs.222.40 (1400 students x Rs.20 per head) – (1388.88 students x Rs.20.).

No. of students to be added = $\text{Rs.}222.40 / \text{Rs.}200 = 1.12$ students.

No. of students to be enrolled to earn an income of Rs.100000 = $1388.88 + 1.12 = 1390$ students.

Problem No. 16

Golden Bergs Ltd., plans to earn Rs.210000 after income taxes in 1998. The tax rate is to be assumed 40% of net income before taxes. The fixed costs for the year are estimated at Rs.420000. The contribution margin is estimated at 20% of sales revenue.

You are required to compute the sales revenue required to earn a net income after income taxes of Rs.210000. If the contribution margin can be

increased to 25%, how much sales revenue will be required to earn a net income after income taxes of Rs.2,10,000?.

Solution:

In order to earn profit after income tax, the following break-even equation will be used:

(i).

= Fixed costs + (After-tax profit / 1 – tax rate) \ Marginal contribution ratio.

= 420000 + (210000 / 1 – 40%) / 20%.

= 420000 + 350000 / 20%.

= Rs.770000 / 20%.

= Rs. 38,50,000.

(ii).

= FC + (PAT/ 1 – Tax rate.) / Marginal contribution ratio.

= 420000+350000 / 25%.

=Rs.770000 / 25%.

=Rs.30,80,000.

Proof:

Particulars	(i)
Sales	3850000
Variable Costs (80%of sales)	3080000
Marginal contribution (20%)	770000
	420000
Fixed costs	350000
Income before taxes	140000
Income taxes(40%)	210000
Net income after taxes	
ii) Sales	3080000
Variable Costs (75%of sales)	2310000
Marginal contribution (25%)	770000
	420000
Fixed costs	350000
	140000
Income before taxes	210000
Income taxes(40%)	
Net income after taxes	

Problem No.17

Comment on the profitability to the following two products.
Particular from Genocide Ltd.,

Particulars.	Product cost per unit. Product – A. Rs.	Product cost per cent cent unit. Product – B Rs.
Materials	200	150
Wages	100	200
Fixed Overhead	350	100
Variable over head	150	200
Profit	200	350
Selling price	1,000	1,000
Out put per week	200units.	100units.

Solution:

Statement of Comparative Profitability

	Per unit of production For Product – A.	For Product – B.
Selling price.	1000	1000
Marginal cost.	450	550
Contribution.	550	450
Fixed cost.	350	100
Profit per unit.	200	350
Total Profit.	40000	35000
P\V ration.	55%	45%
Profit \ sales Ratio.	20%	35%

Comments

Although profit per unit of product B is more than that of product A. the contribution and total profit of A are more than that of B. If output is increased or decreased, fixed cost per unit cannot remain constant. In such a case, contribution is a better indicator of profitability. If any key factor is in operation, then contribution in relation to key factor should be taken into account while deciding upon the profitability of the products, other things remaining the same. A is more profitable product than B.

Problem No.18

- (a) Alien Swisher Ltd., manufactures and sells four types of products under the brand names of A, B, C and D respectively. The sales mix in value comprises $33\frac{1}{3}\%$, $41\frac{2}{3}\%$, $16\frac{2}{3}\%$, $8\frac{1}{3}\%$ of products A,B,C,D respectively. The total budgeted sales (100%) is Rs.60000 per month.

Operating Costs are:

Variable Costs. Product-A

= 60% of selling price.

Variable Costs. Product-B

= 68 % of selling price.

Variable Costs. Product-C

= 80% of selling price.

Variable Costs. Product-D

= 40 % of selling price.

Fixed cost

= Rs. 14700 per month.

Calculate the break-even point for the products on an overall basis.

(b) It has been proposed to change the sales mix as follows, the total sales per month remaining Rs.60,000.

Product-A =25%. B= 40%, C =30%, D =5%.

Assuming that the proposal is implemented, calculate the break-even point.

Solution-(a:)

Particular.	Product-A	B	C	D	Total
Sales mix	33 ¹ / ₃ %,	41 ² / ₃ %	16 ² / ₃ %	8 ¹ / ₃ %	100%
	Rs.	Rs.	Rs.	Rs.	Rs.
Sales.	20000	25000	10000	5000	60000
Variable costs.	12000	17000	8000	2000	39000
Contribution.	8000	8000	2000	3000	21000
Fixed costs.					14700
Profit.					6300
P\V ratio.	40%	32%	20%	60%	35%

BEP = Fixed Cost \ Contribution x Sales.

BEP = 14700 \ 21000 x 60000.

= Rs.42,000.

Solution-b:

Particular.	Product-A	B	C	D	Total
Sales mix	25%	40 %	30 %	5 %	100%
	Rs.	Rs.	Rs.	Rs.	Rs.
Sales.	15000	24000	18000	3000	60000
Variable costs.	9000	16320	14400	1200	40920
Contribution.	6000	7680	3600	1800	19080
Fixed costs.					14700
Profit.					4380
P\V ratio.	40%	32%	20%	60%	31.8%1

BEP = Fixed Cost \ Contribution x Sales.

BEP = 14700 \ 19080 x 60000.

= Rs.46,200.

Problem No.19

The sales turnover and profit during two periods were as follows.

Period	Sales	Profit
1	200000	20000
2	300000	40000

What would be the probable trading results with sales of Rs.180000? What amount of sales will yield a profit of Rs.50000?

Solution

First of all P/V ratio should be calculated.

$$\begin{aligned} \text{P/V Ratio} &= \text{Change in contribution} / \text{Change in sales} \times 100. \\ &= \text{Rs.20000} / \text{Rs.100000} \times 100. \\ &= 20\%. \end{aligned}$$

Fixed Cost = Contribution – Profit.

Contribution at sales of Rs.200000 = Rs.40000 (20% of Rs.200000).

FC = Rs.40000 – Rs.20000.

= Rs.20000.

Profit when sales are Rs.180000.

Contribution at sales of Rs.180000 = Rs.36,000.

Profit = Contribution – Fixed Cost.

= 36000 – 20000

= Rs.16000.

Sales required for earning profit of Rs.50000.

Sales = FC + Profit / P.V. ratio.

= 20000+50000 / 20%.

= Rs.350000.

7. Evaluation of Performance

Evaluation of performance efficiency of various departments or product lines can be made with the help of marginal costing. The management has to discontinue the production of non-profitable products or departments so as to maximize the profits. In such cases, decision to discontinue will be based on the lowest contribution or p/v ratio.

8. Decision-making

Decision-making is the essence of management since it may make or buy the success of the business as a whole. In general it means taking the final step in deliberations before acting. In management terms it has a specific earnings. It means the process of choosing among alternative course of action, since there is no choice; there is no decision to make. A decision always involves a prediction. The function of decision maker is, therefore, to select sources of action for the

future. In such a case the decision should be made on the basis of contribution analysis.

Summary

Management planning for company success includes planning for price, volume, fixed and variable costs, quality contribution margin, and breakeven point. The inter-relationships of these factors are studied in breakeven and cost-volume profit (CVP) analysis.

The Breakeven point uses liner relationships to determine that quantity of sales volume at which the company will experience zero profits or loss. Total contribution margin (sales minus all variable costs) is equal to total fixed costs at the break-even point. BEP will change if the company's selling price(s) or costs change.

The margin of safety of a firm indicates how far (in units, sales dollars, or a percentage) a company is operating from its breakeven point. A company's degrees of operating leverage shows what percentage change in profit would occur given a specified percentage change in sales from the current level.

CVP analysis is short-range in focus because it assumes linearity of all functions. Managers need to include in their considerations the effect of quality (and other types of) changes on both current and future costs to make better, more realistic decisions. While CVP analysis provides one way for a manager to reduce the risk of uncertainty, the model is based on several assumptions that limit its ability to reflect reality.

GLOSSARY

Revenue

Total revenue fluctuates in direct proportion to units sold.

Variable Costs

Total variable costs fluctuate in direct proportion to level of activity or volume

Fixed Cost

Total fixed costs remain constant within the relevant range.

Total Cost

Total cost must be separated into their variable and fixed elements before they can be used in breakeven analysis.

Break Even Point

The level of activity, in units or amount, at which total revenues equal total costs.

Contribution

Selling price per unit minus all variable production, selling and administrative cost per unit.

P/V Ratio

Contribution margin divided by revenue; indicates what proportion of selling price remains after variable costs have been covered.

Margin of Safety

The excess of budgeted or actual sales of a company over its break even point.

Cost-Volume-Profit Analysis

It is the process of examining the relationships among revenues, costs, and profits for a relevant range of activity and for a particular time frame.

KEY TO CHECK YOUR PROGRESS – I

3. (a) 4.(b) 5.(d) 6. (b) 7. (c)

KEY TO CHECK YOUR PROGRESS – II

4. (a) 5.(b) 6.(c) 7.(b) 8.(a).

MODEL QUESTIONS

2. Explain the technique of marginal costing and state its importance in decision making.
3. What is break-even analysis? Discuss its assumptions and uses.
4. Marginal costing technique can be valuable aid to management". Discuss this statement and give your views.
5. Examine the concept of "Margin of Safety" and give its uses for decision making.
6. Write notes on:
 - P/V Ratio
 - Break-Even Point
 - Margin of safety
 - Angle of incidence
 - Variable cost

Fixed cost

Contribution

Exercise and Discussions

Problem No. 1

Moon Ltd., produces a single article. Following cost data is given about its product.

Selling price per unit	Rs.20
Marginal cost per unit	Rs.12
Fixed Cost Per annum	Rs.800

Calculate: P/V ratio b) break-even sales c) sales to earn a profit of Rs.1000 d) Profit at sales of Rs.6000 e) new break even sales, if sales price is reduced by 10%.

Problem No. 2

There are two similar plants under the same management. The management desires to merge these two plants. The following particulars are available:

	<i>Factory I</i>	<i>Factory II</i>
Capacity Operation	100%	60%
Sales	Rs.300 lakhs	Rs.120 lakhs
Variable Costs	220 lakhs	90 lakhs
Fixed Costs	40 lakhs	20 lakhs

You are required to calculate: (a) what would be the capacity of the merged plant to be operated for the purpose of break even, and (b) what would be the profitability on working at 75% of the merged capacity.

[Ans. (a) 46.15%; (b) 10%]

Problem No. 3

Ramesh Manufacturing Ltd. produces water-tanks of a standard size, which sells at Rs.100 per cent tank.

From the data given below, you are required to determine

1. P/V ratio
2. Fixed Cost
3. Variable Cost per unit
4. Break-even point
5. Margin of safety

Quarter	Sales (Rs.)	Profit/(Loss)
1 st	30,00,000	3,00,000
2 nd	35,00,000	4,00,000
3 rd	13,00,000	(40,000)
4 th	24,00,000	1,80,000

(Ans: P/V Ratio, 20%; Fixed Cost Rs.3,00,000; Variable Cost per unit Rs.100; Break-Even Point Rs.15,00,000; Margin of safety Rs.9,00,000)

Problem No. 4

Sangam Enterprises has a resort at Kodaikanal. It runs for 6 months in a year, i.e. 26 weeks. It can accommodate 6 to 15 guests at a cost of Rs.5,000 per person per week.

Weekly costs incurred by the resort are as follows:

	Rs. per guest
Food	1,250
Electricity for heating and cooking	150
Beverages	500
Laundry cleaning etc.	250

Staff are employed at a contract of Rs.5,00,000 for a period of 6 months. The staff can cater to the needs of 6 to 10 guests. If 11 or more guests come, an additional staff is required for which management has to pay Rs.74,100 for the whole period of 6 months.

The resort has been taken on lease by the management on a rent of Rs.1,91,000 for the full year. The resort is looked after by watch and ward staff it is closed for 6 months at a cost of Rs.50,000.

You are required to calculate the break-even point for the resort.

(Ans. 11 guests)

Problem No. 5

Comment on the profitability to the following two products

	<i>Product Cost per Unit</i>	
	Product A	<i>Product B</i>
Materials	200	150
Wages	100	200
Fixed Overhead	350	350
Variable Overhead	150	200
Profit	200	350
Selling Price	1,000	1,000
Output per week	200 units	100 units

(Ans. Other things remaining the same, A is more profitable product than B)

CHAPTER 9 BUDGETARY CONTROL

STRUCTURE

- 9.0 Introduction**
- 9.1 Unit Objectives**
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9.0 INTRODUCTION

A budget may be defined as an expression of financial plans. Budgeting involves analysing the past performance, forecasting the future events during the period and fixing the targets. It is not a mere 'forecast', 'prediction' or 'estimate' but a well conceived plan which shows to desired level of profitability of the business as a whole.

A forecast is just the statement of events that are likely to occur; but a budget is a target. The former is concerned with 'probable events', the latter relates to 'planned events' and is a statement of the policy to be carried out.

According to the institute of Cost and Works Accountants (London) budget is "a financial and/or quantitative statement, prepared prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective".

According to the definition, essential of a budget are:

1. Budget is a statement defining objectives to be attained in future period.
2. Budget is a plan of the policy to be followed during the budget period to achieve objectives.
3. Budget may express its targets either in monetary or in physical units or both.
4. Budget is prepared for a specific period well in advance.

9.1 UNIT OBJECTIVES

After completing this chapter, you should be able to:

- ❖ state the importance of budgeting process
- ❖ explain how the managerial function of control is related to budgeting
- ❖ recognize why management should use achievable budget targets
- ❖ explain the procedures for preparation of various functional budgets
- ❖ discuss the process of zero base budgeting

9.2 BUDGETING

“Budgeting may be said to be the act of building the budgets”

Budgeting is defined as “the entire process of preparing the budgets”

9.3 BUDGETARY CONTROL

Budgetary Control is a system which uses budgets as a means of planning and controlling all the aspects of a business. The Institute of Cost and Works Accountants (London) defines Budgetary Control as “the establishment of budget relating to the responsibilities of executives to the requirements of a policy, and the continuous comparison of actual with budgeted results, either to secure by individual action, the objective of that policy or to provide a basis for its revision:

Thus the budgetary control involves the following:

1. Establishment of budgets;
2. Measurement of actual performance;
3. Continuous comparison of actual attainment with the budget;
4. Analysis of the causes of variations and reporting to management for corrective action;
5. Revision of budgets if necessary.

The difference between budget, budgeting and budgetary control has been stated thus. A budget is a means and budgetary control is the end result; budgeting is the art of planning, budgetary control is the art of executing the plan.

9.4 OBJECTIVES OF BUDGETARY CONTROL

The Objectives of the Budgetary Control are as follows:

To plan the allocation of business resources, so as to achieve maximum profitability.

To communicate plans and targets to executives responsible for their execution/

To co-ordinate the activities of the business.

To motivate executives to achieve targets.

To provide a yardstick for comparison with targets.

To show management where action is needed to remedy a situation.

To centralise control and to decentralise responsibility by giving responsibility to each executive.

To combine ideas and aspirations of all levels of management.

To act as a guide and director during unforeseen contingencies.

The objectives are not independent of each other, rather they overlap. For example, when the planning function is performed, the basis for effective co-ordination has been laid. It is impossible to obtain effective co-ordination and control without effective planning. Co-ordination is impossible without effective control and effective control results in effective co-ordination.

9.5 ADVANTAGES OF BUDGETARY CONTROL

1. Business budgets are the principal financial instruments by which the management can formalise and express its plan in terms of quantity, revenue and costs. Budgeting helps the process of planning by reduction to concrete numerical goals;
2. The budget serves as a tool through which the functions of various departments and divisions are co-ordinated. To prepare a budget it is necessary for all the sections of the business to cooperate and to be aware of other sections' strengths and limitations as well as their own. This coordination provides for smoother operation and less internal friction which results in the achievement of the budget goals.
3. Budgetary Control paves the way for the management to delegate authority and responsibility without sacrificing overall control. By giving executives at lower levels the authority and responsibility of routine operations, it enables the manager to take decisions on many vital issues and provides opportunities for the unfolding of their capacities and talents.
4. Measurement of performance, production and sales quotas and other targets are achieved automatically as part of the system. As a control device, it involves comparison of actual results with the budgets. Variances are reasoned out and remedial actions are taken to achieve cost control.
5. It directs capital expenditure in the most profitable channels.

6. The budget of each receipts and expenditure ensures sufficient working capital and other resources for the efficient operation of the business.
7. Budgetary control also acts as an impersonal policemen and bring efficiency and economy to the management to shoot at rather than plunge in the dark.
8. It guards the firm over ambitious managers who most of the time think of extra ambitious plans.
9. By means of centralisation budgetary control is uniformly brought out.
10. Budgeting also helps to forecast the possible effects of various decisions.
11. It prepares the basic ground for the adoption of standard costing and other cost control.
12. It facilitates the participation of all in planning, thus it provides better motivation for achievement of the targets.
13. It acts as a feed back for revision and alternate the future plans of action.

9.6 LIMITATIONS OF BUDGETARY CONTROL

1. The budget plan is based on estimates, Estimates relating to the future can never be perfectly accurate for the simple reason that they are always uncertain. If the budgeted figures are hopelessly inaccurate, then the whole system concerned is likely to be of very limited value.
2. A budgetary programme must be continuously adopted to changing circumstances. Various techniques must be tried, improved or discarded and replaced with others. Normally, it takes several years to attain a good system of budgetary control.
3. Budget is only a management tool. It cannot substitute management. Besides that no budgetary programme can be successful unless adequate arrangement are made for supervision and administration.
4. The cost of installing and operating a Budgetary Control System is often quite high and small-scale business house cannot afford. Thus this system can be followed only by large organisations. Even in some large enterprises budgetary control systems are so detailed that they become cumbersome and unduly expensive.

5. A paper work may be involved in the operation of budgetary control. The complacency of paper work may lead to eventuality that little notice or action is taken.
6. The basic requirement for the success of budgeting is the absolute co-ordinations between various departments; this is often lacking in many organisations.
7. A best budgeting is one which puts the appropriate responsibilities squarely on the shoulders of the concerned person. But, it is not so simple. Many *times* there is overlapping of duties. Budgetary Control has to overcome this difficult.
8. Another difficulty within regard to budgeting is the attitude of old and well established people who many not like to pursue the dynamic approach of the managements as regard to budgetary control. Moreover, any system of budgetary control cannot be successful unless it has the full support of the top management.

9.7 ESSENTIAL REQUISITES OF BUDGETARY CONTROL

Effective budgetary programme should possess the following essentials:

1. Clearly defined organisation: In order to carry out budgeting in a manner that will provide maximum benefit, a good organisation must be developed.

2. Adequate accounting system: The accounting system in the business should be adequate. The accounting system should make it possible to establish such responsibility beyond doubt. In short, accounting should be made by responsibilities.

3. Clearly defined policy: The policies and instructions relating to production, price and profit, personnel, advertisement and sales promotion, capital expenditure project etc., should be clearly defined in unambiguous terms. The policies constitute the foundation upon which the budgets are framed.

4. Preparation of budgets by executives: A budget committee should be established consisting of the budget director, chief executive officer and executive of various departments of the organisations. Subject to overall control of the

budget committee, the preparation of estimates should be entrusted to persons who are responsible for the implementation of the budget.

5. Logical sequence in budget preparation: It is essential that proper arrangements be made for the preparation, submission, examination review of budget figures in logical sequence. Generally, such an arrangement involves:

- (a) Determination of the 'Key Factor' of budget estimates.
- (b) Preparation of forecasts relating to all activities of the business.
- (c) Submitting forecasts to Budget Committee which studies, reviews and modifies them into a co-ordinated overall plans.
- (d) With the help of budget figures budgeted Profit and Loss Account and Balance Sheet are prepared.
- (e) The summary of budgets and budgeted Profit and Loss Account and Balance will be knitted into a 'Master Budget' which will be submitted to the top management for approval.

6. Flexibility: Budgets must be flexible. That is to say that if actual business conditions differ from what were expected, it should be possible to recast the budgets quickly. This question of flexibility is tackled through 'Flexible Budgets'.

7. Constant vigilance: An effective system of budgeting requires that periodic reports comparing budget and the actual results should be prepared promptly. As soon as favourable trends are directed, immediate remedial action should be taken.

8. Budget Education: It is equally important that every one in the organisation should know the working of budget programme and its benefits. 'Budget Manual' is a useful guide in imparting budget education. If budget education is neglected, the possible result would be "compiling figures for the sake of compiling and framing policies for the sake of policies".

9. Cost of Operation: The budget systems should not cost more to operate than it is worth. It implies a caution against expensive refinements unless their value clearly justifies them.

10. Co-operation of Top Management: Above all, budgeting must have a complete co-operation of the top management. It is the life force for the budgetary programme.

9.8 CHECK YOUR PROGRESS – I

1. Distinguish between budget, budgeting and budgetary control.

2. State objectives of budgetary control.

3. List out the limitations of budgetary control?

4. Discuss the advantages of budgetary control.

9.9 TYPES OF BUDGETS

As budget serves different purpose, different types of budgets have been developed. The following are the most common basis of classification:

- I. Classification according to Time.
- II. Classification according to Function..
- III. Classification according to Flexibility.

Classification According to Time

In terms of time, Budget can be classified as follows:

- (a) Long-term Budget:** A budget designed for a long period generally for a period of five to ten years is termed as Long-term Budget. This Budget is concerned with planning of the operation of a firm over a long period of time. It is generally prepared in terms of physical units.
- (b) Short-term Budget:** The budget is designed for a period generally not exceeding five years. It is prepared in physical as well as monetary units.
- (c) Current Budget:** A current budget is one established for use over a short period of time and is related to current conditions.
- d) Rolling Budget :** It is also called as progressive budget. The management has prepared the budget in advance. A new budget is prepared after the end of each month/quarter for a full year ahead. The figures for the month or quarter, which has rolled down, are dropped and the figures for the next month or quarter are added. This practice will continue whenever a quarter ends and a new quarter begins.

9.9.2 Classification According to Function

Usually, the business houses will be prepared budget for each of that functions, purchase, sales, production etc., are being treated as separate functions and for each such function, a budget will be prepared. All are being called "Functional Budget". Their number depends on the size and nature of the business. The following budgets are frequently prepared:

1. Sales Budget
2. Selling and Distribution Costs and Budget
3. Production Budget
4. Production Cost Budget
5. Raw Materials Budget
6. Purchase Budget

7. Direct Labour Budget
8. Plant Utilisation Budget
9. Factory or Production Overhead Budget
10. Administration Cost Budget
11. Capital Expenditure Budget
12. Research and Development Costs Budget
13. Cash Budget
14. Master Budget

1. Sales Budget

Sales budget is a forecast of total sales during a period expressed in money and/or quantities it may be (a) product-wise (b) territory-wise (c) customer-wise (d) period-wise according to salesmen. In preparing a sales budget, the following factors should be considered; analysis of past sales trend, estimates of salesmen, available plant capacity, orders on hand, competition, market conditions and elasticity of demand. A simple form of a sales budget is given below:

SALES BUDGET					Period				
	PRODUCT A				PRODUCT B				
Month	Zone a		Zone b		Zone a		Zone b		Total
	Qty.	Amount	Qty.	Amount	Qty.	Amount	Qty.	Amount	

2. Selling and Distribution Cost Budget:

The selling and distribution costs budget is directly related to the sales budget. It is a forecast of expenses relating to selling and distribution of products for the budget period. The sales manager, advertising manager and distribution manager will co-operate in the preparation of this budget. The following points would be considered in the preparation of this budget:

- (a) The channels for distribution of products.
- (b) The advertising and sales promotion policy.

- (c) The market area to be covered.
- (d) The mode of packing and dispatch of products to customers.
- (e) The credit and collection policy.

A specimen form of the selling and distribution costs budget is given below:

<i>Selling and Distribution Costs Budget</i>				
<i>Sl. No</i>	<i>EXPENSES</i>	<i>ZONE A Rs.</i>	<i>ZONE B Rs.</i>	<i>TOTAL Rs.</i>
1.	Salesmen Salaries, Commission etc.			
2.	Rent of Show Rooms and Sales Depots			
3.	Sales Promotion Expenses			
4.	Insurance			
5.	Discounts and Rebates			
6.	Depreciation			
7.	Credit Collection			

	(A)			
8.	Storage & Warehousing charges			
9.	Packing charges			
10.	Despatch and Delivery			
11.	Reconditioning of empties			
12.	Insurance, Depreciation, repairs etc.			
	Total (A+B) (B)			

3. Production Budget

Production budget is forecasting of output for the period, analysed according to production, manufacturing department and periods of production. It is based on sales budget. The budgeted production of any period is determined on the basis of level of finished goods, inventory proposed to be held at the end of the period and the opening inventory of finished goods, in addition to sales budget, in short:

$$\text{Budgeted production} = \text{Expected Productivity} = \text{Expected Sales} + \text{Closing Stock} + \text{Opening Stock}$$

A specimen form of the production budget is given below

<i>Production Budget for the First quarter of the year</i>			
	<i>UNITS</i>		
	<i>JANUAR Y</i>	<i>FEBRUARY</i>	<i>MARCH</i>
Sales:	XXXX	XXXX	XXXX
Add: Estimated Stock at the end of the month	XXX	XXX	XXX
Less: Expected stock at the beginning of the Month	XXXX XXX	XXXX XXX	XXXX XXX
Estimated Production	XXXX	XXXX	XXXX

4. Production Cost Budget

This budget expresses the details given in the production budget in terms of cost. It includes the cost of three elements normally incurred in the process of production-material, direct labour and overhead. Separate budgets for these elements will be prepared. Costs will be analysed by department and by products. Assume that two kinds of products are being manufactured by a particular business concern. Then, a specimen of production cost budget may look like the following:

<i>Production Cost Budget</i>				
			<i>Period</i>	
			<i>PRODUCTS</i>	
ELEMENTS OF COST			<i>A Rs.</i>	<i>B Rs.</i>
Raw Materials: (main groups listed here)	Total (A)	XXXX	XXXX	XXXX
Direct Labour (main groups listed here)	Total (B)	XXXX	XXXX	XXXX
Production Overheads (main groups listed here)	Total (C)	XXXX	XXXX	XXXX
Total of all items (A + B + C)		XXXX	XXXXXX	XXXXXX

5. Raw Materials Budget

The raw materials budget indicates the estimated volume and cost of raw materials and components required for the output revealed by the production budget. The cost of each raw material will be calculated by taking into account the standard price of each material fixed already. The budget furnishes details and data regarding raw materials to the production department for the preparation of production cost budget and to the purchasing department for purchase budget.

To manufacture a product, more than one type of raw material may be needed. Likewise, for the production of more than one product, different types of raw materials may be needed. The raw materials budget has to show the required quantity of each raw material and their cost in addition to the total all.

Assume that a particular company manufactures two kinds of products for which four types of raw materials are needed. The raw materials budget for the company will consists of details as follows:

Raw Materials Budget				
				Period
				RAW MATERIALS (UNITS)
ELEMENTS OF COST	A	B	C	D
Product I	XX	XX	NR	NR
Product II	NR	NR	XX	XX
Consumption	XX	XX	XX	XX
Standard Price Per cent Unit	Rs.	Rs.	Rs.	Rs.
Cost (total units of consumption are multiplied by standard price per unit)				
Rs.				

XX – It denotes number of unit.

NR – It denotes the fact that product I does not require raw materials 'C&D' and product II does not require raw materials 'A&B'

6. Purchases Budget

The purchase budget gives details of the purchases which must be made during the period of feed requirements of the business. Purchases include direct and indirect materials, parts and components, equipment and finished goods, services like electricity and gas etc., Many factors such as the amount of working capital available, warehousing facility, insurance on inventories, cost of handling

stocks, and the price fluctuation have to be taken into consideration before fixing the targeted purchases. Any how generally the purchases budget is prepared on the basis of raw materials budget vis-a-vis desired ending and beginning raw material inventory levels. In other words, the purchases budget is derived from:

- a) The quantity of raw materials (estimated in raw materials budget) required for budgeted production.
- b) The level of materials inventory to be maintained at the end of the period.
- c) Level of opening inventory of materials.
- d) Standard price per unit of materials.

The budgeted purchases will be equal to $(a + b - c) \times d$.

The maximum and minimum inventory limits will be fixed by taking into account a number of factors such as amount of time needed to replenish the stock of each class of materials, or lead time, the volume of materials which will be consumed each month week or day, delays in transportation and rush orders.

Purchases Budget				
				Period:
	MATERIALS (UNITS)			
	A	B	C	D
Consumption during the period	X	X	X	X
Add: Required stock at the end of the period	X	X	X	X
Total	X	X	X	X
Less: Estimated stock at the beginning of the period	X	X	X	X
Purchases	X	X	X	X
Cost (Units of purchases are multiplied by standard price per unit)	Rs.	Rs.	Rs.	Rs.

7. Direct Labour Budget

Direct Labour Budget is constructed on the foundation of Production Budget. It provides estimated direct labour cost for attaining budgeted output. Labour of different grades required for a job or a process or a product is determined in terms of labour hours and wage rate per hour is estimated. The labour cost per unit is ascertained by multiplying labour hours by wage rate. The total budgeted output multiplied by labour cost per unit will give the estimated total cost of direct labour. Where standard costing is in use direct labour cost

budget can be the prepared by applying the standard labour cost per unit to the budgeted output.

A specimen form of direct labour budget is given below.

Labour Requirement Budget

Direct Labour Budget Output: 1000 Units 'A' 10,000 Standard Hours 2000 Units 'B' 3000 Units 'C'					
<i>Period:</i>					
EMPLOYEES	NUMBER	HOURS	STANDARD	DIRECT LABOUR	TOTAL
			Rs.	Rs.	Rs.
Male					
Skilled					
Semi-skilled					
Unskilled					
Female					
Skilled					
Semi-skilled					
Unskilled					

8. Plant Utilisation Budget

This budget is also based on production budget. It gives arrangement of plant facilities required to carry out the programme laid down in the production budget and capital expenditure budget. It shows budgeted capacity in terms of working hours or other convenient units. The main purposes of this budget are:

- a) Determining machine load on each department;
- b) Indicating overloaded departments for taking suitable actions such as allowing overtime or transferring work to other departments, or getting work done from outside or expending plant; and
- c) Adjusting sales and production budgets according to plant capacity.

A specimen form of plant utilization budget is given below:

Plant Utilization Budget					
Department Machine	Number of Hours Available In Period	Normal Lost Time	Standard Capacity In Hours	Period: Output Per Standard Hours	Standard Quantity (Units)
A 1	1,000	100	900	5	4,500
2					
3					
B 1					

2					
3					
Total					

9. Factory or Production Overhead Budget

This budget is meant for the estimation of factory overhead cost during the budget period. All indirect costs (overheads) likely to be incurred by the factory have to be taken into account. All factory overheads are apportioned into fixed, variable and semi-variable. Fixed overhead will not be affected by the volume of output. It is comparatively easy to estimate accuracy-rent, rates, insurance etc. Variable overhead will vary directly with volume of output-consumable stores, scrap etc. The semi-variable is used here to represent those costs which are not fixed in total over the entire range of production or which do not vary in total, directly with production. They are partly fixed and partly variable-power, light, maintenance etc. While preparing this budget consideration should be given to the level of activity likely to be achieved, because with big changes even fixed costs will change.

A Specimen of for this budget is given below:

Production Overhead Budget		Period		
	OVERHEAD TOTAL	PRODUCTION DEPARTMENTS		
		A	B	C
A) VARIABLE: Consumable Stores Scrap				
B) SEMI-VARIABLE: Indirect Wages				
Power				
Heat/light				
Maintenance				
C) FIXED				
Salaries				
Depreciation				
Insurance				
Rent/Rates				
General				
Total (A+B+C)				

10. Administration Cost Budget

This budget is concerned with those costs which are all management, administrative and office expenses and which do not specially relate to any other budget. General management, the general office, legal branch, public relations departments etc., all give rise to the expenses of salaries stationery, telephone, travelling and stores of others item.

The preparation of administrative cost budget requires the same care as the others budgets. With minor variations in business activity administrative cost will remain fairly constant and therefore pre-determination should present no great problem. For instance, salaries of various executives, lawyers and others, rates, taxes and rent are all of fixed costs. some costs are of a semi-variable nature, e.g., travelling costs, stationery, depreciation of office machinery and supplies. Past experience plus known changes in the member of personnel and in procedure are taken into consideration to estimate the budget.

A specimen form of this budget is given below:

ADMINISTRATIVE COST BUDGET	
Period:	
	Rs.
Audit Fees	
Bank Charges	XXX
Cleaning Costs	XXX
Depreciation	XXX
Director's fees	XXX
Donation	XXX
Insurance	XXX
Legal Costs	XXX
Postages	XXX
Printing and Stationery	XXX
Rates and Taxes	XXX
Rent	XXX
Salaries	XXX
Sundry Supplies	XXX
Telephone	XXX
Travelling Expenses	XXX
Total	XXXX

11. Capital Expenditure Budget

This budget shows the detailed plant of the top management concerning additions, improvements and replacement of all fixed assets during the budget

period. This budget may include such items as plant additions, new buildings, land, intangibles such as patents etc. Since the capital expenditure is frequently planned a number of years in advance, the budget period in this case may differ from that of other budgets. This budget will be compiled with the necessary information received from various departments. The estimation of the cost of various fixed asset required by various departments includes the purchase price of assets, delivery cost and the company's own internal costs connected with installation and related work. This budget provides a tool for controlling capital expenditure and enables the company to establish a system of priorities in the expenditure.

A Specimen form of this Budget is given below:

CAPITAL EXPENDITURE BUDGET							
<i>Description of fixed Assets</i>	<i>External Costs (Rs.)</i>	<i>Internal Costs (Rs.)</i>	<i>Grand Total</i>	<i>Estimated life of Assets</i>	<i>Rate of Return</i>	<i>Assets to be replaced</i>	
	<i>Assets Delivery Total</i>	<i>Labour Material Overhead</i>				<i>Description</i>	<i>Cost</i>
A) Production Department Building Machines							
B) Administration Department Computer Machine room							
C) Sales Department Ten cars Show room							
D) Distribution							

Department							
One truck							
Two vans							

12. Research and Development Costs Budget

This budget tells the estimated expenditure for development and research during the budget period. The budget is usually prepared into two parts, (i) fixed expenses necessary to maintain research and development work at the irreducible level and (ii) Cost to be incurred on completing the research projects in hand and new project to be taken up.

A Specimen form of this budget is given below:

Research and Development Cost Budget		
Period		
NATURE OF THE EXPENDITURE	<i>AMOUNT ESTIMATED (Rs.)</i>	<i>AMOUNT SPENT Rs.</i>
A. FIXED COST		
a) Rent and Rates		
b) Insurance and Other charges		
c) Salaries to staff		
B. COST OF CONTINUING WORK		
a) Raw materials		
b) Power and Lighting		
c) Equipment and machines		
d) Verification and testing		
e) Processing and Registration		
C. COST OF FUTURE WORK		
a) Raw material cost		
b) Power and Lighting		
c) Machines and equipment		
d) Verification and testing		

d) Processing and Registration		
Total Cost (A+B+C)		

13. Cash Budget

The cash budget is a forecast of expected cash receipts and payments for the budget period. It gives details of cash needs by quarters of months or weeks. This budget mainly derives its contents from other budgets concerned with cash inflows and outflows. To prepare cash budget all other budget must have been prepared already.

The cash budget for a period will begin the opening balance of cash in hand and at the bank. To this all the receipts will be added. Cash sales, collection from debtors, interest, dividend and rent receivable etc., are the sources of cash receipts.

From the total of cash receipts, cash disbursements should be deducted. The important items among the cash payments are cash purchases, disbursement to creditors, salaries, wages and taxes.

A specimen form of this budget is given below:

**Paramount Company Limited,
Cash Budget**

Period: 3 Months ending on 31st March

	<i>Jan. Rs.</i>	<i>Feb. Rs.</i>	<i>Mar. Rs.</i>	Total
Balance b/d				
Cash Receipts				
1. Cash Sales	---	---	---	---
2. Collection from Debtors	---	---	---	---
3. Short-term Loan	---	---	---	---
4. Capital raised	---	---	---	---
5. Sale of assets	---	---	---	---
6. Interest on investments	---	---	---	---
7. Other sundry receipts	---	---	---	---
Total Cash Receipts (A)	---	---	---	---
Cash Payments	---	---	---	---
8. Creditors	---	---	---	---
9. Salaries and wages	---	---	---	---
10. Production Overhead expenses	---	---	---	---
11. Selling and distribution overhead	---	---	---	---

expenses				
12. Admission expenses	---	---	---	---
13. Research and Development expenses	---	---	---	---
14. Capital expenditure	---	---	---	---
15. Interest on Debts	---	---	---	---
16. Dividend	---	---	---	---
17. Income Tax	---	---	---	---
18. Other Sundry Payments	---	---	---	---
Total Cash Payments (B)	---	---	---	---
Minimum desired cash balance	---	---	---	---

	Jan. Rs.	Feb. Rs.	Mar. Rs.	Total
Total Cash Requirements (C)	---	---	---	---
Excess Cash Deficiency (A-C)	---	---	---	---
Cash Financing	---	---	---	---
Cash to be borrowed (D)	---	---	---	---
Cash to repay loans (E)	---	---	---	---
Cash to be invested (F)	---	---	---	---
Cash Balance at the end	---	---	---	---
[(A + D) (B + E	---	---	---	---

14 Master Budget

Master budget is a summary budget incorporating all functional budgets. It projects a complete picture of everything that is expected to happen during the next budget period. It takes the shape of budgeted Profit and Loss Account and the Balance Sheet. It has to be approved and adopted by the Board of Directors before it is put into operation.

9.9.3 Classification According To Flexibility

On the basis of flexibility, budgets can be divided into two categories.

1. Fixed Budget
- 2) Flexible Budget

1) Fixed Budget

According to Institute of Cost and Works Accountants (London) "a fixed budget is one which is designed to remain unchanged irrespective of the level of activity actually attained". It is prepared for predetermined volume of production. The individual items in such a budgets are often not even classified as to fixed or variable elements. Further it does not take note of changes in the circumstances. Such a budget is of limited use to management in its control-exercising function because variation of actual costs from budget costs arise whenever the total number of units produced is different from that on which the budget was based. For example. A typical fixed budget is a plan tailored to a single target volume level of say 5,000 units. But the actual volume of producing may turn out to be 4,000 units instead of the budgeted target of 5,000 units. Therefore, it becomes useless for comparison with actual performance when level of activity changes.

2. Flexible Budget

According to Institute of Cost and Works Accountants (London) a flexible budget is "a budget designed to change in accordance with the level of activity attained". It gives recognition to varying levels of production and to the costs that change with these levels. It overcomes the shortcomings of that fixed budget by providing management with a basis for analysing and therefore controlling the variances between budgeted and actual costs. This is accomplished by comparing actual expenditure with previously established budgeted amounts, adjusted for varying level of production.

To prepare flexible budgets, all costs should be classified with fixed, variable, semi-variable and semi-fixed costs.

Fixed costs are the costs that, without changes in present productive capacity are not affected by changes in volume of output. Depreciation, property taxes on factory building, fire insurance and rent on factory building may be the examples of these costs. They do not change when productive volume increases or decreases.

Variable costs are cost that are affected in total by changes in volume of output. The cost of direct materials, for example, is a variable cost because it increases in direct proportion to the increases in the number of units produced.

Semi-fixed costs are that vary in steps, they are not affected by changes in volume of output within a given range of output. For example, one inspector may be required for an output of 0 to 1,000 units; two may be required for outputs of 1,000 to 2,000 units; and so on.

Semi-variable costs are costs that include both a fixed and variable component. An example is foreman who receives a basic salary plus bonus determined by a per cent of production.

When a flexible budget is prepared, the fixed and variable components of each semi-variable cost must be resolved. Also, the production range of the semi-fixed costs must be known so that the amounts may be indicated as being fixed for only that particular range. For example, indirect labour may remain constant for the 80 and 90 per cent production capacity, but it may be indicated at a higher fixed amount for the 90 and 100 per cent production capacity.

Thus to prepare a flexible budget, a series of budget is prepared, showing estimated costs at various levels of production. It is not practicable to set up budgets for every possible level of operation. For example, the flexible budget are at 5,000 units intervals and actual production falls at a point between the intervals. If so interpolation may be necessary, the flexible budget, therefore, is essentially a series of fixed budgets. The preparation of any one budget in the series is the same as for the single fixed budget.

Problem No.1

XYZ Ltd company manufactures two products A and B. A forecast of the number of units to be sold in first seven months of the year is given below:

	Product A Rs.	Product B Rs.
January	1,000	2,800
February	1,200	2,800
March	1,600	2,400
April	2,000	2,000
May	2,400	1,600

June	2,400	1,600
July	2,000	1,800

It is anticipated that (i) there will be no work-in-progress at the end of any month (ii) finished units equal to half the sales for the next month will be stock at the end of month (including the previous December)

Budgeted production and production costs for the whole year are as follows:

	Product A	<i>Product B</i>
Production (Units)	22,000	24,000
Per Unit: Direct material	Rs.10.00	Rs.15.00
Direct labour	5.00	10.00
Total factory overhead apportioned	88,000	72,000

Prepare for the six months ending on 30th June, a production budget for each month and summarised production cost budget.

Solution:

PRODUCTION BUDGET FOR PRODUCT -A
(For Six months ending on 30th June)

	<i>Jan.</i> (Units)	<i>Feb.</i> (Units)	<i>Mar.</i> (Units)	<i>April</i> (Units)	<i>May</i> (Units)	<i>June</i> (Units)
Product- A						
Sales	1,000	1,200	1,600	2,000	2,400	2,400
Add: Closing Stock (half the sales for next month)	600	800	1,000	1,200	1,200	1,000
	1,600	2,000	2,600	3,200	3,600	3,400
Less: Opening Stock (half the sales for current month)	500	600	800	1,000	1,200	1,200
Budgeted Production	1,100	1,400	1,800	2,200	2,400	2,200

Total Budgeted production for six months:

$$1,000 + 1,400 + 1,800 + 2,200 + 2,400 + 2,200 = 11,100 \text{ units}$$

PRODUCTION BUDGET FOR PRODUCT 'B'

	<i>Jan. (Units)</i>	<i>Feb. (Units)</i>	<i>Mar. (Units)</i>	<i>April (Units)</i>	<i>May (Units)</i>	<i>June (Units)</i>
Product- B						
Sales	2,800	2,800	2,400	2,000	1,600	1,600
Add: Closing Stock	1,400	1,200	1,000	800	800	900
	4,200	4,000	3,400	2,800	2,400	2,500
Less: Opening Stock	1,400	1,400	1,200	1,000	800	800
Budgeted Production	2,800	2,600	2,200	1,800	1,600	1,700

Total Budgeted Production

$$2,800 + 2,600 + 2,200 + 1,800 + 1,600 + 1,700 = 12,700 \text{ Units.}$$

Closing stock of previous month becomes the opening stock of the current month.

Summarised Production Cost Budget

	<i>Product A Output 11,100 Units</i>		<i>Product B Output 12,700 Units</i>		Total
	<i>Per Unit Rs.</i>	<i>Amount Rs.</i>	<i>Per Unit Rs.</i>	<i>Amount Rs.</i>	<i>Rs.</i>
Direct Material	10.00	1,11,000	15.00	1,90,500	3,01,500
Direct Labour	5.00	55,500	10.00	1,27,000	1,82,500
Prime Cost	15.00	1,66,500		3,17,500	4,84,000
Factory Overheads	4.00	44,400	25.00 3.00	38,100	82,500
Total Production Cost	19.00	2,10,900	28.00	3,55,600	5,66,500

Working:

$$\text{Factory Overhead per unit} = \frac{\text{Annual Overhead}}{\text{Annual Output}}$$

$$(1) \text{ Product-A} = \frac{\text{Rs.88,000}}{\text{Rs.22,000}} = \text{Rs.4}$$

$$(1) \text{ Product-B} = \frac{\text{Rs.72,000}}{\text{Rs.24,000}} = \text{Rs.3}$$

Problem No.2:

M/s. Vasax & Co. Manufactures three products X, Y and Z and sells them through three divisions, North, South and West.

Sales budgets for the current year based on the estimates of the sales Divisional Managers, were: X – North 15,220 Units, South 12,500 Units and West 17,560 Units; Y-North 18,000 Units, South-7,500 Units and West 8,000 Units; and Z-North 16,500 Units, South 20,500 Units and West 6,000 Units. Sales prices are 12, Rs.8 and Rs.10 in all areas.

Actual sales for the current year X-North-16,200 Units, South 13,800 Units, and West 18,000; Y-North 12,500 Units, South 7,000 Units and West 6,000 Units and Z-North 14,000 Units, South 16,500 Units and West 7,500 Units.

A market research was conducted by the management of the company and it was found out that product X has a favour among customers, but it under-priced, it is increased by Re.1,00, it sales will not be affected. The price of product Y is proposed to be reduced by Re.1.00 as it is overpriced. Product Z is properly priced, but extensive advertisement is required to push up its sales.

On the basis of information and information provided by salesmen, it is estimated by the divisional managers that increase in sales over current budget will be X – North 10%, South 5% and West 5%, Y-North 10%, South 5% and West 10%; and Z-North 5%, South 10% and West 15%.

It is also expected that there will be further push up in sales, if extensive advertisement is resorted to. The increase will be X-North 1,500 Units, South 240 Units, West 55 Units, Y-North 600 Units, South 1,000 Units, West 650 Units and Z-North 600 Units, South Nil and West 700 Units.

Prepare a sales budget

Solution:**SALES BUDGET**

Division	Product	Budget for future period		
		Quantity	Price Rs.	Amount Rs.
North	X	18,242	13	2,37,146
	Y	20,400	7	1,42,800
	Z	17,925	10	1,79,250
				5,59,196
South	X	13,365	13	1,73,745
	Y	8,875	7	62,125
	Z	22,550	10	2,25,500
				4,61,370
West	X	18,493	13	2,40,000
	Y	9,450	7	66,150
	Z	7,600	10	76,000
				3,82,559
			Total	14,03,125

Problem No.3:

Prepare a Cash Budget for the month of May, June and July 2003 on the basis of the following information:

1. Income and Expenditure Forecasts:

Month	Sales	Credit Purchase	Wages	Manufacturing Expenses	Office Expenses	Selling Expenses
March	60,000	36,000	9,000	4,000	2,000	4,000
April	62,000	38,000	8,000	3,000	1,500	5,000
May	64,000	33,000	10,000	4,500	2,500	4,500
June	58,000	35,000	8,500	3,500	2,000	3,500
July	56,000	39,000	9,500	4,000	1,000	4,500
August	60,000	34,000	8,000	3,000	1,500	4,500

- Cash balance on 1st May 2003, Rs.8,000.
- Plant costing Rs.16,000 is due for delivery in July, payable 10% on delivery and the balance after 3 months.
- Advance Tax of Rs.8,000 each is payable in March and June.
- Period of credit allowed (i) by supplies – two months, and (ii) to customers – one months.
- Lag in payment of manufacturing expenses – 1/2 months.
- Lag in payment of office and selling expenses – one month.

Solution
CASH BUDGET

Particulars	May 2003 Rs.	June 2003 Rs.	July 2003 Rs.
A) Opening Balance	8,000	13,750	12,250
Add Cash Receipts:			
Debtors (Amount realised from Debtors)	62,000	64,000	58,000
Total Receipts	70,000	77,750	70,250
B) Less: Cash Payments:			
Creditors (Credit Purchases)	36,000	38,000	33,000
Wages	10,000	8,500	9,500
Manufacturing Expenses	3,750	4,000	3,750
Office Expenses	1,500	2,500	2,000
Selling Expenses	5,000	4,500	3,500
Plant – payment on delivery	--	--	1,600
Advance Tax	--	8,000	--
Total Payments	56,250	65,500	53,500
Closing Balance (A-B)	13,750	12,250	16,900

Problem No.4:

The expenses for budgeted production of 10,000 units in a factory are furnished below:

	Per Unit Rs.70
Materials	
Labour	25
Variable Overheads	20
Fixed Overheads (Rs.1,00,000)	10
Variable Expenses (Direct)	5
Selling Expenses (10% Fixed)	13
Distribution Expenses (20% Fixed)	7
Administration Expenses (Rs.50,000)	5
Total Cost of per unit(to make and sell)	155

Prepare a budget for production of:

- a) 8,000 units, b) 6,000 units, and c) indicate cost per unit at both the levels.
Assume that administration expenses are fixed for all levels of production.

Solution
FLEXIBLE BUDGET

Particulars	1000 Units		8,000 Units		6,000 Units	
	Per Unit Rs.	Amount Rs.	Per Unit Rs.	Amount Rs.	Per Unit Rs.	Amount Rs.
Production Expenses						
Materials	70	7,00,000	70	5,60,000	70	4,20,000
Labour	25	2,50,000	25	2,00,000	25	1,50,000
Overheads	20	2,00,000	20	1,60,000	20	1,20,000
Direct Variable Expenses	5	50,000	5	40,000	5	30,000
Fixed Overheads (Rs. 1,00,000)	10	1,00,000	12.50	1,00,000	16.667	1,00,000
Selling Expenses						
Fixed	1.3	13,000	1.625	13,000	2.167	13,000
Variable	11.7	1,17,000	11.700	93,600	11.700	70,200
Distribution Expenses						
Fixed	1.4	14,000	1.750	14,000	2.334	14,000
Variable	5.6	56,000	5.600	44,800	5.600	33,600
Administration Expenses	5.0	50,000	6.250	50,000	8.333	50,000
Total Cost	155	15,50,000	159.425	12,75,400	166.801	10,00,800

Problem No.5:

Prepare a production budget for three months ending on March 31st, 1989, for a factory producing four products, on the basis of the following information.

Type of Product	Estimated Stock on Jan.1, 2000 (Units)	Estimated Sales During Jan.-March, 2000	Desired Closing Stock on Mar, 31, 2000 (Units)
A	2,000	10,000	3,000
B	3,000	15,000	5,000
C	4,000	13,000	3,000
D	3,000	12,000	2,000

Solution:

PRODUCTION BUDGET FOR THREE MONTHS TO MARCH 31, 2000

		Units
Product A: Estimated Sales	10,000	
Add: Desired Closing Stock	3,000	
	13,000	
Less: Estimated Opening Stock	2,000	11,000
Product B: Estimated Sales	15,000	
Add: Desired Closing Stock	5,000	
	20,000	
Less: Estimated Opening Stock	3,000	17,000
Product C: Estimated Sales	13,000	
Add: Desired Closing Stock	3,000	
	16,000	
Less: Estimated Opening Stock	4,000	12,000
Product D: Estimated Sales	12,000	
Add: Desired Closing Stock	2,000	
	14,000	
Less: Estimated Opening Stock	3,000	11,000
Total Units to be Produced		51,000

Problem No.6:

The Sales Director of manufacturing company reports that next year he expects to sell 50,000 units of a particular product.

The Production Manager consults the store keeper and casts his figures as follows:

Two kinds of raw materials, A and B are required for manufacturing the product. Each unit of the product requires 2 units of A and 3 units of B. The estimated opening balances at the commencement of the next year are:

Finished Product : 10,000 units.

Raw Material: A: 12,000 Units, B: 15,000 Units.

The desirable closing balances at the end of the next are:

Finished Products: 14,000 units, A: 13,000 units, B 16,000 units.

Draw up a quantitative chart showing materials purchase budget for the next year.

Solution:

The Units to be produced are = Sales + Desired Closing Stock – Opening Stock
 $= 50,000 + 14,000 - 10,000 = 54,000$ units;

MATERIALS PURCHASE BUDGET

Particulars	<i>Finished Product Units</i>	<i>Material</i>	
		<i>A Units</i>	<i>B Units</i>
Production Budget	54,000	1,08,000	1,62,000
Estimated Opening Balances	+10,000	– 12,000	– 15,000
	64,000	96,000	1,47,00
Estimated Closing Balances	–14,000	+ 13,000	+ 16,000
Estimated Sales of Product	50,000		
Estimated Purchase of Materials		1,09,000	1,63,000

Problem No.7: A glass manufacturing company requires you to calculate and present the budget for the next year from the following information:

Sales:

Toughened glass

Rs.3,00,000

Bent toughened glass

Rs.5,00,000

Direct material cost

60% of sales

Direct wages

20 workers @ Rs.150 p.m.

Factory overheads:

Indirect labour

Works manager

Rs.500 p.m.

Foreman

Rs.400 p.m.

Stores and spares

2 ½ % on sales

Depreciation on machinery	Rs.12,600
Light and power	Rs.5,000
Repairs and maintenance	Rs.8,000
Other sundries	10% on direct wages
Administration, selling and distribution expenses	Rs.14,000 p.a.

Solution:

Master budget for the year.....

	Rs.
(A) Sales budget	
Toughened glass	3,00,000
Bent toughened glass	5,00,000

	8,00,000
Less: Administration, selling and distribution expenses	14,000

Net sales revenue	7,86,000

 (B) Production cost budget	
Direct materials (60% of sales)	4,80,000
Direct wages (20 x Rs.150 x 12 months)	36,000

Prime cost	5,16,000
 Factory overheads:	Rs.
Variable: Stores and spares (2 ½% of sales)	20,000
Light and power	5,000
Repairs and maintenance	8,000

	33,000
 Fixed: Indirect labour:	
Works manager (Rs.500 x 12)	6,000
Foreman (Rs.400 x 12)	4,800
Depreciation	12,600
Sundries (10% x Rs.36,000)	3,600

	27,000

Work Cost	5,76,000

Budgeted net profit (A-B)	2,10,000

9.10 ZERO-BASE BUDGETING

ZBB is a comprehensive budgeting process that systematically considers the priorities and alternatives for current and proposed activities in relation to organizational objectives. This technique was first used by the agriculture department of the US as long back as in 1961. Texas Instruments, a multinational company, pioneered its use in the private sector. The Institute of chartered accountants of India has also prepared a research monograph for the application of the ZBB approach in the country, keeping in view the national environment and requirements. However, the system has not yet been implanted in real terms in our country.

In order to understand the correct concept of zero base budgeting it will be useful here to go through the definitions given by eminent management expert.

“An operating planning and budgeting process which required each manager to justify his entire budget requests in detail from scratch (hence zero basis). Each manager states why he should spend any money at all. This approach requires that all activities be identified as decision packages which would be evaluated by systematic analysis and ranked in order of importance”.

“ZBB is a management tool which provides a systematic method for evaluating all operations and programmes, current or new, allows for budget reductions and expansions in a rational manner and allows re-allocation of sources from low to high priority programmes”.

Zero-Based Budgeting is applicable in all business organizations, especially in the support and service areas where non-monetary measures of performance are available. However, zero-based budgeting does not provide measure of efficiency; also, it is difficult to implement because of the significant amount of effort necessary to investigate the causes of prior costs and justify the purposes of budgeted cost.

9.10.1 Process of Zero-Base Budgeting

The process of zero-base budgeting involves the following steps.

9.10.2 Setting up of Objectives

The determination of the objectives of budgeting is the first step in the system of introducing zero base budgeting. The objective may be to effect cost

reduction in staff overheads or analyze and drop the projects, which do is it not, fit in the organizational structure or which are not likely to help in achieving of the organization's objectives.

9.10.3 Determination of Destination

Framing the new organization chart or evaluating the pending re-organization or programme realignment after studying the organizational structure, the management can decide whether zero based budgeting is to be introduced in all areas of organization's activities or only in a few selected areas on trial basis.

9.10.4 Development of Decision Units

Decision units refer to units regarding which cost benefit analysis will be done to arrive at a decision whether they should be allowed to continue or should they be dropped. It may be a functional department, a programme, a product-line or a sub line. Each decision unit must be independent to all the other units so that if the cost analysis proves unfavourable that unit can be dropped. While selecting such decision units, the following points should be kept in mind

- b) they should be capable of being meaningfully reviewed and analyzed
- c) whether it should be capable of being taking significant decision.

Development of Decision Package

The management examines the alternative way of accomplishing the objective. The management does the cost benefit analysis and selects the best alternative. The management prepares the decision packages, which effectively summarize his plans and the resources required to achieve. The general practice is that a decision unit manager prepares and submits 3 to 5 such packages.

The decision packages consists of answers to the following questions

- a) Is it necessary to perform the activity at all? If the answer is in the negative, there is no need of proceeding further.
- b) How much has been the actual cost of the activity and what has been the actual benefit both tangible as well as intangible forms?
- c) What should be the estimated cost of the level of activity and the estimated benefit from such activity?

- d) Should the activity be performed in the way in which it is being performed and what should be the cost?
- e) If the project or activity is dropped, can the unit be replaced by outside agency or shelved altogether?

Review and Ranking of Decision Packages

The decision packages after being developed and formulated are submitted to next level of responsibility within the organization for ranking purposes. The objective of such ranking is to put the limited resources at the disposal of the organization to the best use. The management ranks the various decision packages in order of decreasing benefit or importance to the organization. The decision unit manager himself who has developed the decision packages does the preliminary ranking. They are then sent to the superior officer who once again review and rank the decision packages keeping in view the overall objectives of the organization in mind.

Preparation of Budgets

This is the last stage involved in the ZBB process. Once the top management has ranked the various decision packages keeping in view the cost-benefit analysis and the availability of funds, a cut-off point is established. All packages that come within this cut-off point are accepted and others are rejected. These resources are then allocated to the different decision units and budgets relating to each unit are prepared.

9.11 PERFORMANCE BUDGETING

Performance Budgeting involves evaluation of performance of the organization in the context of both specific as well as overall objectives of the organization. It presupposes the crystal clarity of organizational objectives in general and short-term business objectives as stipulated in the budget, in particular by each employee of the organization, irrespective of his level. It thus, provides a definite direction to each employee and also a control mechanism to higher management.

According to the National Institute of Bank Management, performance budgeting technique is, the process of analyzing, identifying, simplifying and crystallizing specific performance objectives of a job to be achieved over a period in the framework of the organizational objectives, the purpose and objectives of the job. The technique is characterized by its specific direction towards the business objectives of the organization.

Thus, performance budgeting requires preparation of performance reports. Such reports compare budget and actual data and show any existing variances. Their preparation is greatly facilitated if the authority and responsibility for the incurrence of each cost element is clearly defined within the firm's organizational structure. In addition, the accounting system should be sufficiently detailed and coordinated to provide necessary data for reports designed for the particular use of the individuals or cost centers having primary responsibility for specific cost. If budgets are to be used in effectively evaluating performance, they should be challenging but achievable. The advantages of using achievable budget targets include the following:

1. Management's commitment to achieve the budget targets is increased because the managers will have little reason not to be able to meet the target.
2. Management's confidence remains high; achievement of the target is perceived as successful performance.
3. Organizational control costs decrease because there is less necessity to apply the management by exception principle when targets are achieved.
4. The risk of managers engaging in harmful short-term "income management" practices (such as delaying maintenance or shifting sales between years) is reduced.
5. Effective managers are allowed greater operating flexibility because they may be able to accumulate some additional resources on the basis of good performance.

6. The Corporation is some what protected against the costs of optimistic projections, such as overproduction and warehousing.
7. The predictability of corporate earnings is increased because the probability of target achievement is high.

The responsibility for preparing the performance budget of each department lies on the respective Departmental head. Each departmental head will be supplied with a copy of the section of the master budget appropriate to his sphere. The purpose of submitting these reports is to convey promptly the information about the deviations in actual and budgeted activity to the person who has the necessary authority and responsibility so that he may take necessary action to correct any deviation from the budget.

Problem No.8:

Bharat Consumer Products employs 10 trucks of 10 tonnes capacity to deliver products to their distributors. The vehicles return empty on the return journey. The following data refer to the month of May 1998.

	Budget	Actual
Load carried (tones)	4000	3800
Number of truck trips	500	450
Journey hours	3000	2500
Loading time (hours)	1000	800
Km. Traveled	25000	25000
Diesel used (liters)	12500	13000
No. of drivers	12	12
No. of mechanics	5	5
Fixed costs	Rs.8000	Rs.8000
Cost per liter of diesel	1.00	1.00
Wages per driver per month	1000	1050
Wages per mechanic per month	800	900
Spares for repairs	2000	2500

Prepare a statement for management detailing budgeted and actual operating cost. Also give your comments on the performance.

COMPARATIVE STATEMENT OF OPERATING COSTS

No of Trucks: 10	Capacity : 10 Tonnes Month: May 1997		
	Budget	Actual	Variance
Cost of diesel	12500	12350	150
Spares for repairs	2000	2500	-500
Wages : Drivers	12000	12600	-600
Mechanics	4000	4500	-500
Total Variable cost	30500	31950	-1450
Total fixed costs	8000	8000	---
Total operating costs	38500	39950	-1450
Load and distance carried (in thousand tonne-kms)	100000	95000	-5000
Operating cost per 1000 tonne-km.	0.385	0.421	-0.290
Operating cost per truck trip	77	89	-12
Cost of diesel per journey hour	4.17	4.94	0.77
Truck loaded per hour (tones)	4.00	4.75	0.75
Journey hours per trip	6.00	5.55	0.45
Kms. Traveled per trip	50.00	55.55	5.55

9.12 CHECK YOUR PROGRESS – II

1. What do you understand by the term “rolling budget” and “zero-base budgeting”

2. Prepare the master budget with imaginary figures

3. Distinguish between cash budget and cash flow statement

4. Sales Budget is a
 - a) Functional Budget
 - b) Master Budget
 - c) Expenditure budget
 - d) None of these
5. Which budget designed to furnish budgeted costs for any level of activity?
 - a) Production budget
 - b) Purchase budget
 - c) Sales budget
 - d) flexible budget
6. The budget that is prepared first is
 - a) Cash budget
 - b) Master budget
 - c) Key factor budget
 - d) Sales budget
7. Which is a summary of all functional budgets in a capsule form?
 - a) Master Budget
 - b) Rolling budget
 - c) Cash Budget
 - d) Budget manual
8. Cash Budget is ----- budget
 - a) Long term
 - b) Medium term
 - c) Short term
 - d) Rolling
9. The budget, which commonly takes the form of budgeted Profit and Loss Account and Balance Sheet, is
 - a) Cash Budget
 - b) Master Budget
 - c) Flexible budget
 - d) Fixed Budget
10. Which of the following is NOT the budget according to function?
 - a) Sales Budget
 - b) Production Budget
 - c) Research Budget
 - d) Rolling Budget
11. Which of the following is the budget according to time?
 - a) Personal Budget
 - b) Cash Budget
 - c) Current Budget
 - d) Research Budget
12. A budget which consolidate the organization's overall plan is called
 - a) Cash Budget
 - b) Master Budget
 - c) Flexible budget
 - d) Fixed Budget
13. In case of materials, the key factor may be
 - a) insufficient advertising
 - b) restrictions imposed by quota
 - c) low market demand
 - d) price of the materials

SUMMARY

Planning is the process of setting goals and objectives and translating them into activities and resources required for accomplishment within a specified time horizon. Budgeting is the quantifying of a company's financial plans and activities. Budgets facilitate communication, coordination, and teamwork. A master budget is the comprehensive set of projections for a specific budget period. It is composed of operating and financial budgets and is usually detailed by quarters and months.

Sales demand is the proper starting point for the master budget. Once sales demand is determined, managers forecast revenues, production, costs and cash flows for the firm's activities for the upcoming period. These expectations reflect the firm's input and output of resources and are used in preparing the master budget. When budgeting, managers need to remember that the various organizational departments interact with each other, and the budget for one department may form the basis of or have an effect on the budgets in other departments.

Proforma financial statements will help managers determine whether their plans will provide the desired results, in terms of both net income and cash flow. Inadequate results should cause a reevaluation of the objectives that have been set, and appropriate changes should be made.

Most business attempt to develop financial statement for sometime in the future, based on their projections, after giving consideration to alternative courses of action. Since a firm cannot go many directions at once, management will select one course for the upcoming period, based on the firm's goals and objectives. These statement, based on the assumptions management selected, are commonly referred to as budgeted statements. They will be more detailed so that control can be exercised overall aspects of the enterprise.

9.14 GLOSSARY

Budget

Budget is a financial and /or quantitative statement, prepared and approved prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective.

Budgetary Control

Budgetary control is the establishment of budgets relating the responsibilities of executives to the requirements of a policy, and the continuous comparison of actual with budgeted results, either to secure by individual of that policy or to provide a basis for its revision.

Production Budget

The production budget is an estimate of the quantity of goods that must be produced during the budget period. The aim of the production function will presumably be to supply finished goods of a specified quality to meet marketing demands.

Cash Budget

Cash flow budget is a detailed budget of income and cash expenditure incorporating both revenue and capital items.

Flexible Budget

Flexible budget is a budget which, recognizes the difference in behaviour between fixed and variable costs in relation to fluctuations in output, turnover, or other variable factors, etc.

Zero Base Budgeting

ZBB is a method of budgeting whereby all activities are re-evaluated each time a budget is formulated. Under this system a number of alternatives for each activity are identified, costed and evaluated in terms of the benefit to be obtained from them.

Performance Budgeting

Performance budgeting may be described as a budgetary system where the input costs are related to the performance i.e., the end results.

Rolling Budgeting

A rolling budget is “a budget continuously updated by adding a further period, say a month or quarter and deducing the earliest period.

9.15 KEY TO CHECK YOUR PROGRESS – III

4. (a)	5.(d)	6.(c)	7. (a)	8. (c)
9. (b)	10.(d)	11.(c)	12.(b)	13.(b).

9.16 MODEL QUESTIONS

1. Define Budgetary Control. Explain the role of budgeting in financial control.
2. Write a note on:
 - a) Performance budgeting
 - b) Flexible budgeting
3. Why the master budget is said to be a static budget? Why is it necessary for the master budget to be static?
4. State the factors, which are influencing while preparing sales budget and production budget.
5. Explain the importance of cash budget.
6. What are the pre-requisites for the successful implementation of sound system of budgetary control?
7. What is zero base budgeting?. State the process of preparing zero base budgeting.

Ex.No.1

ABC Co. Wishes to arrange overdraft facilities with its bankers during the period April to June when it will be manufacturing mostly for stock. Prepare a Cash Budget for the above period from the following data, including the extent of bank facilities the company will require at the end of each month.

a)

Months	Sales (Rs.)	Purchases (Rs.)	Wages (Rs.)
February	1,80,000	Rs.1,24,800	12,000
March	1,92,000	1,44,000	14,000

April	1,08,000	2,43,000	11,000
May	1,74,000	2,46,000	10,000
June	1,26,000	2,68,000	15,000

b) 50 per cent of credit sales is realised in the month following the sale and the remaining 50 per cent in the second month following, Creditors are paid in the month following the month of purchase.

c) Cash at bank on the 1st April (estimated) Rs.25,000.

Ex.No.2

ABC Ltd., A newly started company wishes to prepare Cash Budget from January. Prepare a Cash Budget for the first six months from the following estimated revenue and expenses.

Months	Total Sales (Rs.)	Materials (Rs.)	Wages (Rs.)	Overheads	
				Production (Rs.)	Selling & Distribution (Rs.)
January	20,000	20,000	4,000	3,200	800
February	22,000	14,000	4,400	3,300	900
March	28,000	14,000	4,600	3,400	900
April	36,000	22,000	4,600	3,500	1,000
May	30,000	20,000	4,000	3,200	900
June	40,000	25,000	5,000	3,600	1,200

Cash balance on 1st January was Rs.10,000. A new machinery is to be installed at Rs.20,000 on credit, to be repaid by two equal instalments in March and April.

Sales commission @ 5% on total sales is to be paid within a month following actual sales.

Rs.10,000 being the amount of 2nd call may be received in March. Share premium amounting to Rs.2,000 is also obtainable with the 2nd call.

Period of credit allowed by suppliers	:	2 months
Period of Credit allowed to customers	:	1 month
Delay in payment of overheads	:	1 month
Delay in payment of wages	:	½ month

Assume cash sales to be 50% of total.

Ex.No.3

Prepare a Cash Budget for Hyperlink Company on the basis of the following information for the first six months of 1991.

- 1) Cost and price remain unchanged
- 2) Cash sales are 25%, and credit sales are 75% of the total sales
- 3) 60% of credit sales are collected in the month after sales, 30% in the second month and 10% in the third, no bad debts are anticipated.
- 4) Sales forecasts are as follows:

<i>Months</i>	<i>Year</i>	<i>Rs.</i>	<i>Months</i>	<i>Year</i>	<i>Rs.</i>
October	1990	12,00,000	December	1990	16,00,000
November	1990	14,00,000	January	1991	6,00,000
February	1991	8,00,000	May	1991	10,00,000
March	1991	8,00,000	June	1991	8,00,000
April	1991	12,00,000	July	1991	12,00,000

- 5) Gross Profit Margin 20%

- 6) Anticipated purchases:

<i>Months</i>	<i>Year</i>	<i>Rs.</i>	<i>Months</i>	<i>Year</i>	<i>Rs.</i>
January	1991	6,40,000	April	1991	8,00,000
February	1991	6,40,000	May	1991	6,40,000
March	1991	9,60,000	June	1991	9,60,000

- 7) Wages and Salaries to be paid for 1991:

<i>Months</i>	<i>Year</i>	<i>Rs.</i>	<i>Months</i>	<i>Year</i>	<i>Rs.</i>
January	1991	1,20,000	April	1991	2,00,000
February	1991	1,60,000	May	1991	1,60,000
March	1991	2,00,000	June	1991	1,40,000

- 8) Interest on Rs.20,00,000 @ 6% on debentures is due by end of March and June.
- 9) Excise deposit due in April Rs.2,00,000
- 10) Capital expenditure on Plant and Machinery planned for May Rs.1,20,000
- 11) Company has a cash balance of Rs.4,00,000 at 31.12.1990
- 12) Rent is Rs.8,000 per month.

Ex.No.4

XYZ Company Limited has given the following particulars. You are required to prepare a cash budget for three months ending 31st December, 2002. (Rs)

Months	Sales	Materials	Wages	Overheads
August	400000	20400	7600	3800
September	420000	20000	7600	4200
October	460000	19600	8000	4600
November	500000	20000	8400	4800
December	600000	21600	9000	5000

ii) Credit terms are:

Sale/Debtors – 10% of Sales are on cash basis. 50% of the credit sales are collected next month and the balance in the following months.

Creditors - Materials 2 months
 - Wages 1/5 months
 - Overheads ½ months

iii) Cash balance on 1st October, 2002 is expected to be Rs.8000.

iv) Dividend at 10% on preference share capital of Rs.300000 will be paid on 1st December, 2002.

v) Advance to be received for sale of vehicle Rs.20000 in December.

vi) Income-tax (advance) to be paid in December Rs.5000.

Ex 5 Prepare a cash budget for the months of May, June and July of the year 2002 on the basis of the following information: Income and expenditure forecasts:

Months	Credit Sales	Credit Purchases	Wages	Manufacturing Expenses	Office expenses
Selling expenses					
March	60,000	36,000	9,000	4,000	2,000
	4,000				
April	62,000	38,000	8,000	3,000	1,500
	5,000				
May	65,000	33,000	10,000	4,500	2,500
	4,500				
June	58,000	35,000	8,500	3,500	2,000
	3,500				
July	56,000	39,000	9,500	4,000	1,000
	4,500				
August	60,000	34,000	8,000	3,000	1,500
	4,500				

(1) Cash balance on 1st May, 2002 Rs.8,000.

- (2) Plant costing Rs.16,000 is due for delivery in July, payable 10% on delivery and the balance after 3 months.
- (3) Advance Tax of Rs.8,000 each is payable in March and June.
- (4) Period of credit allowed (i) by supplier – 1 month
(ii) to customers – 1 month.
- (5) Lag in payment of manufacturing $\frac{1}{2}$ month.
- (6) Lag in payment of wages – $\frac{1}{4}$ month
- (8) Lag in payment of office and selling expenses – $\frac{1}{2}$ month.

Ex.No.6

You are required to prepare a sales overhead budget from the estimates given below:

Advertisement Rs.1,000

Salaries Rs.1,000

Expenses of the sales department (Fixed) Rs.750.

Salaries and dearness allowance Rs.3,000

Commission at 1% on sales effected.

Carriage outwards: estimated at 5% on sales.

Agent commission: 6.5% on sales.

The sales during the period were estimated as follows:

Rs.80,000 including agent's sales Rs.8,000.

Rs.90,000 including agent's sales Rs.10,000

Rs.1,00,000 including agent's sales Rs.10,500.

Ex.No.7

Golden Company Limited operates on a system of Flexible budgets. With the aid of the following information, you are required to prepare Flexible budget at 80%, 90% and 100% level of activity showing the profits that would result at these levels:

- 1) The present sale of 8,00,000 units at Rs.10 each is at the normal level of 80%. If the output is increased to 90%, the selling price will be reduced by $2\frac{1}{2}$ % and if the output reached 100% the original selling price will be reduced by 5% in order to reach a wider market.
- 2) The prime cost per unit is Rs.5 made up of direct materials Rs.3.50, Direct Labour Rs.1.25 and Direct expenses Re.0.25. If output reaches 90% level of activity and above, a saving of 5% can be effected in the purchase price of raw materials.
- 3) Variable overhead – salesmen's commission will be 5% if the sales value.
- 4) Semi-variable overheads at normal level of activity are:

Rs.

Supervision	80,000
Power	70,000
Heat and light	40,000
Maintenance	50,000
Salesman expenses	60,000
Indirect Labour	1,00,000
Transport costs	2,00,000

These are expected to increase by 5% of output reaches 90% level and by a further 10% if it reaches the 100% level.

5) Fixed overheads are:	Rs.
Rent and rates	1,00,000
Depreciation	4,00,000
Advertisement	5,00,000
Administration	7,50,000
Sales Department	2,00,000
General	50,000

Ex.No.8

The budgeted cost of a factory specializing in the production of a single product at the optimum capacity of 6400 units per annum amounts to Rs.176048 as detailed below:

	Rs.	Rs.
Fixed cost		20688
Variable cost		
Power	1440	
Repairs etc.,	1700	
Miscellaneous	540	
Direct material	49280	
Direct labour	102400	155360
		176048

Taking note of the possible impact on sales turnover by market trends, the company decides to have a flexible budget with a production target of 3200 and 4800 units (the actual quantity proposed to be produced being left to a latter date before commencement of the budget period). Prepare a flexible budget for production levels at 50% and 75%.

Assuming selling price per unit is maintained at Rs.40 as at present, indicate the effect on net profit. Administration, Selling and distribution expenses continue at Rs.3600.

BOOKS FOR FURTHER READINGS

1. Financial Accounting – Jain and Narang – Kalyani Publishers, New Delhi.
- 2.. Introduction to Financial Accounting – Agarwal – Sulthan chand publication, New Delhi.
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